

CPC**COOPERATIVE PATENT CLASSIFICATION****C07D****HETEROCYCLIC COMPOUNDS**

Guide heading: Heterocyclic compounds having only nitrogen as ring hetero atom

C07D 201/00 Preparation, separation, purification or stabilisation of unsubstituted lactams

- C07D 201/02 . Preparation of lactams
- C07D 201/04 . . from or via oximes by Beckmann rearrangement
- C07D 201/06 . . . from ketones by simultaneous oxime formation and rearrangement
- C07D 201/08 . . from carboxylic acids or derivatives thereof, e.g. hydroxycarboxylic acids, lactones, nitriles
- C07D 201/10 . . from cycloaliphatic compounds by simultaneous nitrosylation and rearrangement
- C07D 201/12 . . by depolymerising polyamides
- C07D 201/14 . Preparation of salts or adducts of lactams
- C07D 201/16 . Separation or purification ([separation of inorganic salts C01](#))
- C07D 201/18 . Stabilisation

Guide heading: Heterocyclic compounds having only nitrogen as ring hetero atom

C07D 203/00 Heterocyclic compounds containing three-membered rings with one nitrogen atom as the only ring hetero atom

- C07D 203/02 . Preparation by ring-closure
- C07D 203/04 . not condensed with other rings
- C07D 203/06 . . having no double bonds between ring members or between ring members and non-ring members
- C07D 203/08 . . . with only hydrogen atoms, hydrocarbon or substituted hydrocarbon radicals, directly attached to the ring nitrogen atom
 - C07D 203/10 Radicals substituted by singly bound oxygen atoms
 - C07D 203/12 Radicals substituted by nitrogen atoms not forming part of a nitro radical
 - C07D 203/14 with carbocyclic rings directly attached to the ring nitrogen atom
 - C07D 203/16 . . . with acylated ring nitrogen atoms
 - C07D 203/18 by carboxylic acids, or by sulfur or nitrogen analogues thereof
 - C07D 203/20 by carbonic acid, or by sulfur or nitrogen analogues thereof, e.g. carbamates
 - C07D 203/22 . . . with hetero atoms directly attached to the ring nitrogen atom
 - C07D 203/24 Sulfur atoms
- C07D 203/26 . condensed with carbocyclic rings or ring systems

C07D 205/00 Heterocyclic compounds containing four-membered rings with one nitrogen atom as the only ring hetero atom

- C07D 205/02 . not condensed with other rings
- C07D 205/04 . . having no double bonds between ring members or between ring members and non-ring members
- C07D 205/06 . . having one double bond between ring members or between a ring member and a non-ring member
- C07D 205/08 . . . with one oxygen atom directly attached in position 2, e.g. beta-lactams
- C07D 205/085 with a nitrogen atom directly attached in position 3
- C07D 205/09 with a sulfur atom directly attached in position 4
- C07D 205/095 and with a nitrogen atom directly attached in position 3
- C07D 205/10 . . having two double bonds between ring members or between ring members and non-ring members
- C07D 205/12 . condensed with carbocyclic rings or ring systems

C07D 207/00 Heterocyclic compounds containing five-membered rings not condensed with other rings, with one nitrogen atom as the only ring hetero atom

NOTE

Pyrrolidines having only hydrogen atoms attached to the ring carbon atoms are classified in [C07D 295/00](#)

- C07D 207/02 . with only hydrogen or carbon atoms directly attached to the ring nitrogen atom
- C07D 207/04 . . having no double bonds between ring members or between ring members and non-ring members
- C07D 207/06 . . . with radicals, containing only hydrogen and carbon atoms, attached to ring carbon atoms
- C07D 207/08 . . . with hydrocarbon radicals, substituted by hetero atoms, attached to ring carbon atoms
- C07D 207/09 Radicals substituted by nitrogen atoms, not forming part of a nitro radical
- C07D 207/10 . . . with hetero atoms or with carbon atoms having three bonds to hetero atoms, with at the most one to halogen, e.g. ester or nitrile radicals, directly attached to ring carbon atoms
- C07D 207/12 Oxygen or sulfur atoms
- C07D 207/14 Nitrogen atoms not forming part of a nitro radical
- C07D 207/16 Carbon atoms having three bonds to hetero atoms with at the most one bond to halogen, e.g. ester or nitrile radicals
- C07D 207/18 . . having one double bond between ring members or between a ring member and a non-ring member
- C07D 207/20 . . . with only hydrogen atoms, hydrocarbon or substituted hydrocarbon radicals, directly attached to ring carbon atoms
- C07D 207/22 . . . with hetero atoms or with carbon atoms having three bonds to hetero atoms, with at the most one bond to halogen, e.g. ester or nitrile radicals, directly attached to ring carbon atoms

C07D 207/24	....	Oxygen or sulfur atoms
C07D 207/26	.....	2-Pyrrolidones
C07D 207/263	.....	with only hydrogen atoms or radicals containing only hydrogen and carbon atoms directly attached to other ring carbon atoms
C07D 207/267	.....	with only hydrogen atoms or radicals containing only hydrogen and carbon atoms directly attached to the ring nitrogen atom
C07D 207/27	.....	with substituted hydrocarbon radicals directly attached to the ring nitrogen atom
C07D 207/273	.....	with hetero atoms or with carbon atoms having three bonds to hetero atoms with at the most one bond to halogen, e.g. ester or nitrile radicals, directly attached to other ring carbon atoms
C07D 207/277	.....	Carbon atoms having three bonds to hetero atoms with at the most one bond to halogen, e.g. ester or nitrile radicals
C07D 207/28	.....	2-Pyrrolidone-5- carboxylic acids Functional derivatives thereof, e.g. esters, nitriles
C07D 207/30	..	having two double bonds between ring members or between ring members and non-ring members
C07D 207/32	...	with only hydrogen atoms, hydrocarbon or substituted hydrocarbon radicals, directly attached to ring carbon atoms
C07D 207/323	....	with only hydrogen atoms or radicals containing only hydrogen and carbon atoms directly attached to the ring nitrogen atoms
C07D 207/325	....	with substituted hydrocarbon radicals directly attached to the ring nitrogen atom
C07D 207/327	.....	Radicals substituted by carbon atoms having three bonds to hetero atoms with at the most one bond to halogen, e.g. ester or nitrile radicals
C07D 207/33	....	with substituted hydrocarbon radicals, directly attached to ring carbon atoms
C07D 207/333	.....	Radicals substituted by oxygen or sulfur atoms
C07D 207/335	.....	Radicals substituted by nitrogen atoms not forming part of a nitro radical
C07D 207/337	.....	Radicals substituted by carbon atoms having three bonds to hetero atoms with at the most one bond to halogen, e.g. ester or nitrile radicals
C07D 207/34	...	with heteroatoms or with carbon atoms having three bonds to hetero atoms, with at the most one bond to halogen, e.g. ester or nitrile radicals, directly attached to ring carbon atoms
C07D 207/36	....	Oxygen or sulfur atoms
C07D 207/38	.....	2-Pyrrolones
C07D 207/40	.....	2,5-Pyrrolidine-diones
C07D 207/404	.....	with only hydrogen atoms or radicals containing only hydrogen and carbon atoms directly attached to other ring carbon atoms, e.g. succinimide
C07D 207/408	.....	Radicals containing only hydrogen and carbon atoms attached to ring carbon atoms
C07D 207/412	.....	Acyclic radicals containing more than six carbon atoms
C07D 207/416	.....	with hetero atoms or with carbon atoms having three bonds to hetero atoms with at the most one bond to halogen, e.g. ester or nitrile radicals, directly attached to other ring carbon atoms
C07D 207/42	....	Nitro radicals
C07D 207/44	..	having three double bonds between ring members or between ring members and non-ring members

C07D 207/444	...	having two doubly-bound oxygen atoms directly attached in positions 2 and 5
C07D 207/448	....	with only hydrogen atoms or radicals containing only hydrogen and carbon atoms directly attached to other ring carbon atoms, e.g. maleimide
C07D 207/452	.....	with hydrocarbon radicals, substituted by hetero atoms, directly attached to the ring nitrogen atom
C07D 207/456	....	with hetero atoms or with carbon atoms having three bonds to hetero atoms with at the most one bond to halogen, e.g. ester or nitrile radicals, directly attached to other ring carbon atoms
C07D 207/46	.	with hetero atoms directly attached to the ring nitrogen atom
C07D 207/48	..	Sulfur atoms
C07D 207/50	..	Nitrogen atoms
C07D 209/00		Heterocyclic compounds containing five-membered rings, condensed with other rings, with one nitrogen atom as the only ring hetero atom
C07D 209/02	.	condensed with one carbocyclic ring
C07D 209/04	..	Indoles Hydrogenated indoles
C07D 209/06	...	Preparation of indole from coal-tar
C07D 209/08	...	with only hydrogen atoms or radicals containing only hydrogen and carbon atoms, directly attached to carbon atoms of the hetero ring
C07D 209/10	...	with substituted hydrocarbon radicals attached to carbon atoms of the hetero ring
C07D 209/12	....	Radicals substituted by oxygen atoms
C07D 209/14	....	Radicals substituted by nitrogen atoms, not forming part of a nitro radical
C07D 209/16	.....	Tryptamines
C07D 209/18	....	Radicals substituted by carbon atoms having three bonds to hetero atoms with at the most one bond to halogen, e.g. ester or nitrile radicals
C07D 209/20	.....	substituted additionally by nitrogen atoms, e.g. tryptophane
C07D 209/22	.....	with an aralkyl radical attached to the ring nitrogen atom
C07D 209/24	.....	with an alkyl or cycloalkyl radical attached to the ring nitrogen atom
C07D 209/26	.....	with an acyl radical attached to the ring nitrogen atom
C07D 209/28	.....	1-(4-Chlorobenzoyl)-2-methyl-indolyl-3-acetic acid, substituted in position 5 by an oxygen or nitrogen atom Esters thereof
C07D 209/30	...	with hetero atoms or with carbon atoms having three bonds to hetero atoms with at the most one bond to halogen, directly attached to carbon atoms of the hetero ring
C07D 209/32	....	Oxygen atoms
C07D 209/34	.....	in position 2
C07D 209/36	.....	in position 3, e.g. adrenochrome
C07D 209/38	.....	in position 2 and 3, e.g. isatin
C07D 209/40	....	Nitrogen atoms, not forming part of a nitro radical, e.g. isatin semicarbazone
C07D 209/42	....	Carbon atoms having three bonds to hetero atoms with at the most one bond to halogen, e.g. ester or nitrile radicals

C07D 209/43	...	with an -OCH ₂ CH(OH)CH ₂ NH ₂ radical, which may be further substituted, attached in positions 4, 5, 6 or 7
C07D 209/44	..	Iso-indoles Hydrogenated iso-indoles
C07D 209/46	...	with an oxygen atom in position 1
C07D 209/48	...	with oxygen atoms in positions 1 and 3, e.g. phthalimide
C07D 209/49	....	and having in the molecule an acyl radical containing a saturated three-membered ring, e.g. chrysanthemumic acid esters
C07D 209/50	....	with oxygen and nitrogen atoms in positions 1 and 3
C07D 209/52	..	condensed with a ring other than six-membered
C07D 209/54	..	Spiro-condensed
C07D 209/56	.	Ring systems containing three or more rings
C07D 209/58	..	[b]- or [c]-condensed
C07D 209/60	...	Naphtho [b] pyrroles Hydrogenated naphtho [b] pyrroles
C07D 209/62	...	Naphtho [c] pyrroles Hydrogenated naphtho [c] pyrroles
C07D 209/64	....	with an oxygen atom in position 1
C07D 209/66	....	with oxygen atoms in positions 1 and 3
C07D 209/68	....	with oxygen and nitrogen atoms in positions 1 and 3
C07D 209/70	...	containing carbocyclic rings other than six-membered
C07D 209/72	...	4,7-Endo-alkylene-iso-indoles
C07D 209/74	....	with an oxygen atom in position 1
C07D 209/76	....	with oxygen atoms in positions 1 and 3
C07D 209/78	....	with oxygen and nitrogen atoms in positions 1 and 3
C07D 209/80	..	[b, c]- or [b, d]-condensed
C07D 209/82	...	Carbazoles Hydrogenated carbazoles
C07D 209/84	....	Separation, e.g. from tar Purification
C07D 209/86	....	with only hydrogen atoms, hydrocarbon or substituted hydrocarbon radicals, directly attached to carbon atoms of the ring system
C07D 209/88	....	with hetero atoms or with carbon atoms having three bonds to hetero atoms with at the most one bond to halogen, e.g. ester or nitrile radicals, directly attached to carbon atoms of the ring system
C07D 209/90	...	Benzo [c, d] indoles Hydrogenated benzo [c, d] indoles
C07D 209/92	....	Naphthostyrils
C07D 209/94	..	containing carbocyclic rings other than six-membered
C07D 209/96	..	Spiro-condensed ring systems
C07D 211/00		Heterocyclic compounds containing hydrogenated pyridine rings, not condensed with other rings

NOTE

For the purpose of this group, the term "hydrogenated" means having less than three double bonds between ring members or between ring members and non-ring members;

Piperidines having only hydrogen atoms attached to the ring carbon atoms are classified in [C07D 295/00](#)

- C07D 211/02 . Preparation by ring-closure or hydrogenation
- C07D 211/04 . with only hydrogen or carbon atoms directly attached to the ring nitrogen atom
- C07D 211/06 . . having no double bonds between ring members or between ring members and non-ring members
- C07D 211/08 . . . with hydrocarbon or substituted hydrocarbon radicals directly attached to ring carbon atoms
- C07D 211/10 with radicals containing only carbon and hydrogen atoms attached to ring carbon atoms
- C07D 211/12 with only hydrogen atoms attached to the ring nitrogen atom
- C07D 211/14 with hydrocarbon or substituted hydrocarbon radicals attached to the ring nitrogen atom
- C07D 211/16 with acylated ring nitrogen atom
- C07D 211/18 with substituted hydrocarbon radicals attached to ring carbon atoms
- C07D 211/20 with hydrocarbon radicals, substituted by singly bound oxygen or sulfur atoms (bound to the same carbon atom [C07D 211/30](#))
- C07D 211/22 by oxygen atoms
- C07D 211/24 by sulfur atoms to which a second hetero atom is attached
- C07D 211/26 with hydrocarbon radicals, substituted by nitrogen atoms
- C07D 211/28 to which a second hetero atom is attached
- C07D 211/30 with hydrocarbon radicals, substituted by doubly bound oxygen or sulfur atoms or by two oxygen or sulfur atoms singly bound to the same carbon atom
- C07D 211/32 by oxygen atoms
- C07D 211/34 with hydrocarbon radicals, substituted by carbon atoms having three bonds to hetero atoms with at the most one bond to halogen, e.g. ester or nitrile radicals
- C07D 211/36 . . . with hetero atoms or with carbon atoms having three bonds to hetero atoms with at the most one bond to halogen, e.g. ester or nitrile radicals, directly attached to ring carbon atoms
- C07D 211/38 Halogen atoms or nitro radicals
- C07D 211/40 Oxygen atoms
- C07D 211/42 attached in position 3 or 5
- C07D 211/44 attached in position 4
- C07D 211/46 having a hydrogen atom as the second substituent in position 4
- C07D 211/48 having an acyclic carbon atom attached in position 4
- C07D 211/50 Aroyl radical

C07D 211/52	.....	having an aryl radical as the second substituent in position 4
C07D 211/54	....	Sulfur atoms
C07D 211/56	....	Nitrogen atoms (nitro radicals C07D 211/38)
C07D 211/58	.....	attached in position 4
C07D 211/60	....	Carbon atoms having three bonds to hetero atoms with at the most one bond to halogen, e.g. ester or nitrile radicals
C07D 211/62	.....	attached in position 4
C07D 211/64	.....	having an aryl radical as the second substituent in position 4
C07D 211/66	.....	having a hetero atom as the second substituent in position 4
C07D 211/68	..	having one double bond between ring members or between a ring member and a non-ring member
C07D 211/70	...	with only hydrogen atoms, hydrocarbon or substituted hydrocarbon radicals, directly attached to ring carbon atoms
C07D 211/72	...	with hetero atoms or with carbon atoms having three bonds to hetero atoms, with at the most one bond to halogen, directly attached to ring carbon atoms
C07D 211/74	....	Oxygen atoms
C07D 211/76	.....	attached in position 2 or 6
C07D 211/78	....	Carbon atoms having three bonds to hetero atoms with at the most one bond to halogen
C07D 211/80	..	having two double bonds between ring members or between ring members and non-ring members
C07D 211/82	...	with only hydrogen atoms, hydrocarbon or substituted hydrocarbon radicals, directly attached to ring carbon atoms
C07D 211/84	...	with hetero atoms or with carbon atoms having three bonds to hetero atoms, with at the most one bond to halogen directly attached to ring carbon atoms
C07D 211/86	....	Oxygen atoms
C07D 211/88	.....	attached in positions 2 and 6, e.g. glutarimide
C07D 211/90	....	Carbon atoms having three bonds to hetero atoms with at the most one bond to halogen
C07D 211/92	.	with a hetero atom directly attached to the ring nitrogen atom
C07D 211/94	..	Oxygen atom, e.g. piperidine N-oxide
C07D 211/96	..	Sulfur atom
C07D 211/98	..	Nitrogen atom
C07D 213/00		Heterocyclic compounds containing six-membered rings, not condensed with other rings, with one nitrogen atom as the only ring hetero atom and three or more double bonds between ring members or between ring members and non-ring members
C07D 213/02	.	having three double bonds between ring members or between ring members and non-ring members
C07D 213/04	..	having no bond between the ring nitrogen atom and a non-ring member or having only hydrogen or carbon atoms directly attached to the ring nitrogen atom
C07D 213/06	...	containing only hydrogen and carbon atoms in addition to the ring nitrogen atom
C07D 213/08	....	Preparation by ring-closure
C07D 213/09	.....	involving the use of ammonia, amines, amine salts, or nitriles

C07D 213/10	.....	from acetaldehyde or cyclic polymers thereof
C07D 213/12	.....	from unsaturated compounds
C07D 213/127	....	Preparation from compounds containing pyridine rings
C07D 213/133	....	Preparation by dehydrogenation of hydrogenated pyridine compounds
C07D 213/14	....	Preparation from compounds containing heterocyclic oxygen
C07D 213/16	....	Containing only one pyridine ring
C07D 213/18	.....	Salts thereof
C07D 213/20	.....	Quaternary compounds thereof
C07D 213/22	....	containing two or more pyridine rings directly linked together, e.g. bipyridyl
C07D 213/24	...	with substituted hydrocarbon radicals attached to ring carbon atoms
C07D 213/26	....	Radicals substituted by halogen atoms or nitro radicals
C07D 213/28	....	Radicals substituted by singly-bound oxygen or sulfur atoms (bound to the same carbon atom C07D 213/44)
C07D 213/30	.....	Oxygen atoms
C07D 213/32	.....	Sulfur atoms
C07D 213/34	.....	to which a second heteroatom is attached
C07D 213/36	....	Radicals substituted by singly-bound nitrogen atoms (nitro radicals C07D 213/26)
C07D 213/38	.....	having only hydrogen, hydrocarbon radicals attached to the substituent nitrogen atom
C07D 213/40	.....	Acylated substituent nitrogen atom
C07D 213/42	.....	having hetero atoms attached to the substituent nitrogen atom (nitro radicals C07D 213/26)
C07D 213/44	....	Radicals substituted by doubly-bound oxygen, sulfur, or nitrogen atoms, or by two such atoms singly-bound to the same carbon atom
C07D 213/46	.....	Oxygen atoms
C07D 213/48	.....	Aldehydo radicals
C07D 213/50	.....	Ketonic radicals
C07D 213/51	.....	Acetal radicals
C07D 213/52	.....	Sulfur atoms
C07D 213/53	.....	Nitrogen atoms
C07D 213/54	....	Radicals substituted by carbon atoms having three bonds to heteroatoms, with at the most one to halogen, e.g. ester or nitrile radicals
C07D 213/55	.....	Acids Esters
C07D 213/56	.....	Amides
C07D 213/57	.....	Nitriles
C07D 213/58	.....	Amidines
C07D 213/59	.....	with at least one of the bonds being to sulfur
C07D 213/60	...	with heteroatoms or with carbon atoms having three bonds to hetero atoms, with at the most one to halogen, e.g. ester or nitrile radicals, directly attached to ring carbon atoms
C07D 213/61	....	Halogen atoms or nitro radicals
C07D 213/62	....	Oxygen or sulfur atoms

C07D 213/63	.....	One oxygen atom
C07D 213/64	.....	attached in position 2 or 6
C07D 213/643	.....	2-Phenoxypyridines Derivatives thereof
C07D 213/647	.....	and having in the molecule an acyl radical containing a saturated three-membered ring, e.g. chrysanthemumic acid esters
C07D 213/65	.....	attached in position 3 or 5
C07D 213/66	.....	having in position 3 an oxygen atom and in each of the positions 4 and 5 a carbon atom bound to an oxygen, sulfur or nitrogen atom, e.g. pyridoxal
C07D 213/67	.....	2-Methyl-3-hydroxy-4,5-bis(hydroxy-methyl)pyridine, i.e. pyridoxine
C07D 213/68	.....	attached in position 4
C07D 213/69	.....	Two or more oxygen atoms
C07D 213/70	....	Sulfur atoms
C07D 213/71	.....	to which a second hetero atom is attached
C07D 213/72	....	Nitrogen atoms (nitro radicals C07D 213/61)
C07D 213/73	.....	Unsubstituted amino or imino radicals
C07D 213/74	.....	Amino or imino radicals substituted by hydrocarbon or substituted hydrocarbon radicals
C07D 213/75	.....	Amino or imino radicals, acylated by carboxylic or carbonic acids, or by sulfur or nitrogen analogues thereof, e.g. carbamates
C07D 213/76	.....	to which a second hetero atom is attached (nitro radicals C07D 213/61)
C07D 213/77	.....	Hydrazine radicals
C07D 213/78	....	Carbon atoms having three bonds to hetero atoms, with at the most one to halogen, e.g. ester or nitrile radicals
C07D 213/79	.....	Acids Esters
C07D 213/80	.....	in position 3
C07D 213/803	.....	Processes of preparation
C07D 213/807	.....	Processes of preparation
C07D 213/81	.....	Amides Imides
C07D 213/82	.....	in position 3
C07D 213/83	.....	Thio-acids Thio-esters Thio-amides Thio-imides
C07D 213/84	.....	Nitriles
C07D 213/85	.....	in position 3
C07D 213/86	.....	Hydrazides Thio or imino analogues thereof
C07D 213/87	.....	in position 3
C07D 213/88	.....	Nicotinoylhydrazones
C07D 213/89	..	with hetero atoms directly attached to the ring nitrogen atom

C07D 213/90	.	having more than three double bonds between ring members or between ring members and non-ring members
C07D 215/00		Heterocyclic compounds containing quinoline or hydrogenated quinoline ring systems
C07D 215/02	.	having no bond between the ring nitrogen atom and a non-ring member or having only hydrogen atoms or carbon atoms directly attached to the ring nitrogen atom
C07D 215/04	..	with only hydrogen atoms or radicals containing only hydrogen and carbon atoms, directly attached to the ring carbon atoms
C07D 215/06	...	having only hydrogen atoms, hydrocarbon or substituted hydrocarbon radicals, attached to the ring nitrogen atom
C07D 215/08	...	with acylated ring nitrogen atom
C07D 215/10	...	Quaternary compounds
C07D 215/12	..	with substituted hydrocarbon radicals attached to ring carbon atoms
C07D 215/14	...	Radicals substituted by oxygen atoms
C07D 215/16	..	with hetero atoms or with carbon atoms having three bonds to hetero atoms with at the most one bond to halogen, e.g. ester or nitrile radicals, directly attached to ring carbon atoms
C07D 215/18	...	Halogen atoms or nitro radicals
C07D 215/20	...	Oxygen atoms (quinophthalones C09B 25/00)
C07D 215/22	....	attached in position 2 or 4
C07D 215/227	.....	only one oxygen atom which is attached in position 2
C07D 215/233	.....	only one oxygen atom which is attached in position 4
C07D 215/24	....	attached in position 8
C07D 215/26	.....	Alcohols Ethers thereof
C07D 215/28	.....	with halogen atoms or nitro radicals in positions 5, 6 or 7
C07D 215/30	.....	Metal salts Chelates
C07D 215/32	.....	Esters
C07D 215/34	.....	Carbamates
C07D 215/36	...	Sulfur atoms (C07D 215/24 takes precedence)
C07D 215/38	...	Nitrogen atoms (nitro radicals C07D 215/18)
C07D 215/40	....	attached in position 8
C07D 215/42	....	attached in position 4
C07D 215/44	.....	with aryl radicals attached to said nitrogen atoms
C07D 215/46	.....	with hydrocarbon radicals, substituted by nitrogen atoms, attached to said nitrogen atoms
C07D 215/48	...	Carbon atoms having three bonds to hetero atoms with at the most one bond to halogen
C07D 215/50	....	attached in position 4
C07D 215/52	.....	with aryl radicals attached in position 2
C07D 215/54	....	attached in position 3
C07D 215/56	.....	with oxygen atoms in position 4

- C07D 215/58 . with hetero atoms directly attached to the ring nitrogen atom
- C07D 215/60 . . N-oxides

- C07D 217/00 Heterocyclic compounds containing isoquinoline or hydrogenated isoquinoline ring systems**

- C07D 217/02 . with only hydrogen atoms or radicals containing only carbon and hydrogen atoms, directly attached to carbon atoms of the nitrogen-containing ring
Alkylene-bis-isoquinolines
- C07D 217/04 . . with hydrocarbon or substituted hydrocarbon radicals attached to the ring nitrogen atom
- C07D 217/06 . . with the ring nitrogen atom acylated by carboxylic or carbonic acids, or with sulfur or nitrogen analogues thereof, e.g. carbamates
- C07D 217/08 . . with a hetero atom directly attached to the ring nitrogen atom
- C07D 217/10 . . Quaternary compounds

- C07D 217/12 . with radicals, substituted by hetero atoms, attached to carbon atoms of the nitrogen-containing ring
- C07D 217/14 . . other than aralkyl radicals
- C07D 217/16 . . . substituted by oxygen atoms
- C07D 217/18 . . Aralkyl radicals
- C07D 217/20 . . . with oxygen atoms directly attached to the aromatic ring of said aralkyl radical, e.g. papaverine

- C07D 217/22 . with hetero atoms or with carbon atoms having three bonds to hetero atoms with at the most one bond to halogen, e.g. ester or nitrile radicals, directly attached to carbon atoms of the nitrogen-containing ring
- C07D 217/24 . . Oxygen atoms
- C07D 217/26 . . Carbon atoms having three bonds to hetero atoms with at the most one bond to halogen

- C07D 219/00 Heterocyclic compounds containing acridine or hydrogenated acridine ring systems**

- C07D 219/02 . with only hydrogen, hydrocarbon or substituted hydrocarbon radicals, directly attached to carbon atoms of the ring system

- C07D 219/04 . with hetero atoms or with carbon atoms having three bonds to hetero atoms with at the most one bond to halogen, e.g. ester or nitrile radicals, directly attached to carbon atoms of the ring system
- C07D 219/06 . . Oxygen atoms
- C07D 219/08 . . Nitrogen atoms ([acridine dyes C09B 15/00](#))
- C07D 219/10 . . . attached in position 9
- C07D 219/12 Amino-alkyl-amino radicals attached in position 9

- C07D 219/14 . with hydrocarbon radicals, substituted by nitrogen atoms, attached to the ring nitrogen atom

- C07D 219/16 . with acyl radicals, substituted by nitrogen atoms, attached to the ring nitrogen atom
- C07D 221/00 Heterocyclic compounds containing six-membered rings having one nitrogen atom as the only ring hetero atom, not provided for by groups [C07D 211/00](#) to [C07D 219/00](#)**
- C07D 221/02 . condensed with carbocyclic rings or ring systems
- C07D 221/04 .. ortho- or peri-condensed ring systems
- C07D 221/06 ... Ring systems of three rings
- C07D 221/08 Aza-anthracenes ([acridine C07D 219/00](#))
- C07D 221/10 Aza-phenanthrenes
- C07D 221/12 Phenanthridines
- C07D 221/14 Aza-phenalenes, e.g. 1,8-naphthalimide
- C07D 221/16 containing carbocyclic rings other than six-membered
- C07D 221/18 ... Ring systems of four or more rings
- C07D 221/20 .. Spiro-condensed ring systems
- C07D 221/22 .. Bridged ring systems
- C07D 221/24 ... Camphidines
- C07D 221/26 ... Benzomorphans
- C07D 221/28 ... Morphinans
- C07D 223/00 Heterocyclic compounds containing seven-membered rings having one nitrogen atom as the only ring hetero atom**
- NOTE**
- Hexamethylene imines or 3-aza-bicyclo [3.2.2] nonanes, having only hydrogen atoms attached to the ring carbon atoms, are classified in [C07D 295/00](#)
- C07D 223/02 . not condensed with other rings
- C07D 223/04 .. with only hydrogen atoms, halogen atoms, hydrocarbon or substituted hydrocarbon radicals, directly attached to ring carbon atoms
- C07D 223/06 .. with hetero atoms or with carbon atoms having three bonds to hetero atoms with at the most one bond to halogen, e.g. ester or nitrile radicals, directly attached to ring carbon atoms ([halogen atoms C07D 223/04](#))
- C07D 223/08 ... Oxygen atoms
- C07D 223/10 attached in position 2
- C07D 223/12 ... Nitrogen atoms not forming part of a nitro radical
- C07D 223/14 . condensed with carbocyclic rings or ring systems
- C07D 223/16 .. Benzazepines
Hydrogenated benzazepines
- C07D 223/18 .. Dibenzazepines
Hydrogenated dibenzazepines
- C07D 223/20 ... Dibenz [b, e] azepines

- Hydrogenated dibenz [b, e] azepines
- C07D 223/22 . . . Dibenz [b, f] azepines
- Hydrogenated dibenz [b, f] azepines
- C07D 223/24 with hydrocarbon radicals, substituted by nitrogen atoms, attached to the ring nitrogen atom
- C07D 223/26 having a double bond between positions 10 and 11
- C07D 223/28 having a single bond between positions 10 and 11
- C07D 223/30 with hetero atoms directly attached to the ring nitrogen atom
- C07D 223/32 . . containing carbocyclic rings other than six-membered

C07D 225/00 Heterocyclic compounds containing rings of more than seven members having one nitrogen atom as the only ring hetero atom

NOTE

Polymethyleneimines with at least five ring members and having only hydrogen atoms attached to the ring carbon atoms are classified in group [C07D 295/00](#)

- C07D 225/02 . not condensed with other rings
- C07D 225/04 . condensed with carbocyclic rings or ring systems
- C07D 225/06 . . condensed with one six-membered ring
- C07D 225/08 . . condensed with two six-membered rings

C07D 227/00 Heterocyclic compounds containing rings having one nitrogen atom as the only ring hetero atom, according to more than one of groups [C07D 203/00](#) to [C07D 225/00](#)

NOTE

Polymethyleneimines with at least five ring members and having only hydrogen atoms attached to the ring carbon atoms are classified in group [C07D 295/00](#)

- C07D 227/02 . with only hydrogen or carbon atoms directly attached to the ring nitrogen atom
- C07D 227/04 . . with only hydrogen atoms, hydrocarbon or substituted hydrocarbon radicals, attached to ring carbon atoms
- C07D 227/06 . . with hetero atoms or with carbon atoms having three bonds to hetero atoms with at the most one bond to halogen, e.g. ester or nitrile radicals, directly attached to ring carbon atoms
- C07D 227/08 . . . Oxygen atoms
- C07D 227/087 One doubly-bound oxygen atom in position 2, e.g. lactams
- C07D 227/093 Two doubly-bound oxygen atoms attached to the carbon atoms adjacent to the ring nitrogen atom, e.g. dicarboxylic acid imides
- C07D 227/10 . . . Nitrogen atoms not forming part of a nitro radical
- C07D 227/12 . with hetero atoms directly attached to the ring nitrogen atom

C07D 229/00	Heterocyclic compounds containing rings of less than five members having two nitrogen atoms as the only ring hetero atoms
C07D 229/02	. containing three-membered rings
C07D 231/00	Heterocyclic compounds containing 1,2-diazole or hydrogenated 1,2-diazole rings
C07D 231/02	. not condensed with other rings
C07D 231/04	.. having no double bonds between ring members or between ring members and non-ring members
C07D 231/06	.. having one double bond between ring members or between ring members and non-ring members
C07D 231/08	... with oxygen or sulfur atoms directly attached to ring carbon atoms
C07D 231/10	.. having two or three double bonds between ring members or between ring members and non-ring members
C07D 231/12	... with only hydrogen atoms, hydrocarbon or substituted hydrocarbon radicals, directly attached to ring carbon atoms
C07D 231/14	... with hetero atoms or with carbon atoms having three bonds to hetero atoms with at the most one bond to halogen, e.g. ester or nitrile radicals, directly attached to ring carbon atoms
C07D 231/16	.... Halogen atoms or nitro radicals
C07D 231/18	.... One oxygen or sulfur atom
C07D 231/20	..... One oxygen atom attached in positions 3 or 5
C07D 231/22	..... with aryl radicals attached to ring nitrogen atoms
C07D 231/24	..... having sulfone or sulfonic acid radicals in the molecule
C07D 231/26	..... 1-Phenyl-3-methyl-5- pyrazolones, unsubstituted or substituted on the phenyl ring
C07D 231/28	.... Two oxygen or sulfur atoms
C07D 231/30	..... attached in position 3 and 5
C07D 231/32	..... Oxygen atoms
C07D 231/34	..... with only hydrogen atoms or radicals containing only hydrogen and carbon atoms, attached in position 4
C07D 231/36	..... with hydrocarbon radicals, substituted by hetero atoms, attached in position 4
C07D 231/38	.... Nitrogen atoms (nitro radicals C07D 231/16)
C07D 231/40	..... Acylated on said nitrogen atom
C07D 231/42	..... Benzene-sulfonamido pyrazoles
C07D 231/44	.... Oxygen and nitrogen or sulfur and nitrogen atoms
C07D 231/46	..... Oxygen atom in position 3 or 5 and nitrogen atom in position 4
C07D 231/48	..... with hydrocarbon radicals attached to said nitrogen atom
C07D 231/50	..... Acylated on said nitrogen atom
C07D 231/52	..... Oxygen atom in position 3 and nitrogen atom in position 5, or vice-versa
C07D 231/54	. condensed with carbocyclic rings or ring-systems

C07D 231/56	.. Benzopyrazoles Hydrogenated benzopyrazoles
C07D 233/00	Heterocyclic compounds containing 1,3-diazole or hydrogenated 1,3-diazole rings, not condensed with other rings
C07D 233/02	. having no double bonds between ring members or between ring members and non-ring members
C07D 233/04	. having one double bond between ring members or between a ring member and a non-ring member
C07D 233/06	.. with only hydrogen atoms or radicals containing only hydrogen and carbon atoms, directly attached to ring carbon atoms
C07D 233/08	... with alkyl radicals, containing more than four carbon atoms, directly attached to ring carbon atoms
C07D 233/10	.... with only hydrogen atoms or radicals containing only hydrogen and carbon atoms, directly attached to ring nitrogen atoms
C07D 233/12	.... with substituted hydrocarbon radicals attached to ring nitrogen atoms
C07D 233/14	..... Radicals substituted by oxygen atoms
C07D 233/16	..... Radicals substituted by nitrogen atoms
C07D 233/18	..... Radicals substituted by carbon atoms having three bonds to hetero atoms with at the most one to halogen, e.g. ester or nitrile radicals
C07D 233/20	.. with substituted hydrocarbon radicals, directly attached to ring carbon atoms
C07D 233/22	... Radicals substituted by oxygen atoms
C07D 233/24	... Radicals substituted by nitrogen atoms not forming part of a nitro radical
C07D 233/26	... Radicals substituted by carbon atoms having three bonds to hetero atoms
C07D 233/28	.. with hetero atoms or with carbon atoms having three bonds to hetero atoms with at the most one bond to halogen, e.g. ester or nitrile radicals, directly attached to ring carbon atoms
C07D 233/30	... Oxygen or sulfur atoms
C07D 233/32	.... One oxygen atom
C07D 233/34	..... ethylene-urea
C07D 233/36	..... with hydrocarbon radicals, substituted by nitrogen atoms, attached to ring nitrogen atoms
C07D 233/38	..... with acyl radicals or hetero atoms directly attached to ring nitrogen atoms
C07D 233/40	.... Two or more oxygen atoms
C07D 233/42	.... Sulfur atoms
C07D 233/44	... Nitrogen atoms not forming part of a nitro radical
C07D 233/46	.... with only hydrogen atoms attached to said nitrogen atoms
C07D 233/48	.... with acyclic hydrocarbon or substituted acyclic hydrocarbon radicals, attached to said nitrogen atoms
C07D 233/50	.... with acyclic hydrocarbon or substituted acyclic hydrocarbon radicals, attached to said nitrogen atoms
C07D 233/52	.... with hetero atoms directly attached to said nitrogen atoms
C07D 233/54	. having two double bonds between ring members or between ring members and non-ring members

- C07D 233/56 . . with only hydrogen atoms or radicals containing only hydrogen and carbon atoms, attached to ring carbon atoms
- C07D 233/58 . . . with only hydrogen atoms or radicals containing only hydrogen and carbon atoms, attached to ring nitrogen atoms
- C07D 233/60 . . . with hydrocarbon radicals, substituted by oxygen or sulfur atoms, attached to ring nitrogen atoms
- C07D 233/61 . . . with hydrocarbon radicals, substituted by nitrogen atoms not forming part of a nitro radical, attached to ring nitrogen atoms
- C07D 233/62 . . . with triarylmethyl radicals attached to ring nitrogen atoms ([triarylmethane dyes C09B 11/26](#))
- C07D 233/64 . . with substituted hydrocarbon radicals attached to ring carbon atoms, e.g. histidine
- C07D 233/66 . . with hetero atoms or with carbon atoms having three bonds to hetero atoms with at the most one to halogen, e.g. ester or nitrile radicals, directly attached to ring carbon atoms
- C07D 233/68 . . . Halogen atoms
- C07D 233/70 . . . One oxygen atom
- C07D 233/72 . . . Two oxygen atoms, e.g. hydantoin
- C07D 233/74 with only hydrogen atoms or radicals containing only hydrogen and carbon atoms, attached to other ring members
- C07D 233/76 with substituted hydrocarbon radicals attached to the third ring carbon atom
- C07D 233/78 Radicals substituted by oxygen atoms
- C07D 233/80 with hetero atoms or acyl radicals directly attached to ring nitrogen atoms
- C07D 233/82 Halogen atoms
- C07D 233/84 . . . Sulfur atoms
- C07D 233/86 . . . Oxygen and sulfur atoms, e.g. thiohydantoin
- C07D 233/88 . . . Nitrogen atoms, e.g. allantoin ([nitro radicals C07D 233/91](#))
- C07D 233/90 . . . Carbon atoms having three bonds to hetero atoms with at the most one bond to halogen, e.g. ester or nitrile radicals
- C07D 233/91 . . . Nitro radicals
- C07D 233/92 attached in position 4 or 5
- C07D 233/93 with hydrocarbon radicals, substituted by halogen atoms, attached to other ring members
- C07D 233/94 with hydrocarbon radicals, substituted by oxygen or sulfur atoms, attached to other ring members
- C07D 233/95 with hydrocarbon radicals, substituted by nitrogen atoms, attached to other ring members
- C07D 233/96 . . having three double bonds between ring members or between ring members and non-ring members
- C07D 235/00 Heterocyclic compounds containing 1,3-diazole or hydrogenated 1,3-diazole rings, condensed with other rings**
- C07D 235/02 . . condensed with carbocyclic rings or ring systems
- C07D 235/04 . . Benzimidazoles
Hydrogenated benzimidazoles
- C07D 235/06 . . . with only hydrogen atoms, hydrocarbon or substituted hydrocarbon radicals,

		directly attached in position 2
C07D 235/08	....	Radicals containing only hydrogen and carbon atoms
C07D 235/10	....	Radicals substituted by halogen atoms or nitro radicals
C07D 235/12	....	Radicals substituted by oxygen atoms
C07D 235/14	....	Radicals substituted by nitrogen atoms (by nitro radicals C07D 235/10)
C07D 235/16	....	Radicals substituted by carbon atoms having three bonds to hetero atoms with at the most one bond to halogen, e.g. ester or nitrile radicals
C07D 235/18	...	with aryl radicals directly attached in position 2
C07D 235/20	...	Two benzimidazolyl-2 radicals linked together directly or via a hydrocarbon or substituted hydrocarbon radical
C07D 235/22	...	with hetero atoms directly attached to ring nitrogen atoms (C07D 235/10 takes precedence)
C07D 235/24	...	with hetero atoms or with carbon atoms having three bonds to hetero atoms with at the most one bond to halogen, e.g. ester or nitrile radicals, directly attached in position 2
C07D 235/26	....	Oxygen atoms
C07D 235/28	....	Sulfur atoms
C07D 235/30	....	Nitrogen atoms not forming part of a nitro radical
C07D 235/32	.....	Benzimidazole-2-carbamic acids, unsubstituted or substituted Esters thereof Thio-analogues thereof

[C07D 237/00](#) Heterocyclic compounds containing 1,2-diazine or hydrogenated 1,2-diazine rings

C07D 237/02	.	not condensed with other rings
C07D 237/04	..	having less than three double bonds between ring members or between ring members and non-ring members
C07D 237/06	..	having three double bonds between ring members or between ring members and non-ring members
C07D 237/08	...	with only hydrogen atoms, hydrocarbon or substituted hydrocarbon radicals, directly attached to ring carbon atoms
C07D 237/10	...	with hetero atoms or with carbon atoms having three bonds to hetero atoms with at the most one bond to halogen, e.g. ester or nitrile radicals, directly attached to ring carbon atoms
C07D 237/12	....	Halogen atoms or nitro radicals
C07D 237/14	....	Oxygen atoms
C07D 237/16	.....	Two oxygen atoms
C07D 237/18	....	Sulfur atoms
C07D 237/20	....	Nitrogen atoms (nitro radicals C07D 237/12)
C07D 237/22	....	Nitrogen and oxygen atoms
C07D 237/24	....	Carbon atoms having three bonds to hetero atoms with at the most one bond to halogen
C07D 237/26	.	condensed with carbocyclic rings or ring systems
C07D 237/28	..	Cinnolines
C07D 237/30	..	Phthalazines

C07D 237/32	...	with oxygen atoms directly attached to carbon atoms of the nitrogen-containing ring
C07D 237/34	...	with nitrogen atoms directly attached to carbon atoms of the nitrogen-containing ring, e.g. hydrazine radicals
C07D 237/36	..	Benzo-cinnolines
C07D 239/00		Heterocyclic compounds containing 1,3-diazine or hydrogenated 1,3-diazine rings
C07D 239/02	.	not condensed with other rings
C07D 239/04	..	having no double bonds between ring members or between ring members and non-ring members
C07D 239/06	..	having one double bond between ring members or between a ring member and a non-ring member
C07D 239/08	...	with heteroatoms directly attached in position 2
C07D 239/10	....	Oxygen or sulfur atoms
C07D 239/12	....	Nitrogen atoms not forming part of a nitro radical
C07D 239/14	.....	with only hydrogen atoms, hydrocarbon or substituted hydrocarbon radicals attached to said nitrogen atoms
C07D 239/16	.....	acylated on said nitrogen atoms
C07D 239/18	.....	with hetero atoms attached to said nitrogen atoms, except nitro radicals, e.g. hydrazine radicals
C07D 239/20	..	having two double bonds between ring members or between ring members and non-ring members
C07D 239/22	...	with hetero atoms directly attached to ring carbon atoms
C07D 239/24	..	having three or more double bonds between ring members or between ring members and non-ring members
C07D 239/26	...	with only hydrogen atoms, hydrocarbon or substituted hydrocarbon radicals, directly attached to ring carbon atoms
C07D 239/28	...	with hetero atoms or with carbon atoms having three bonds to hetero atoms with at the most one bond to halogen, directly attached to ring carbon atoms
C07D 239/30	....	Halogen atoms or nitro radicals
C07D 239/32	....	One oxygen, sulfur or nitrogen atom
C07D 239/34	.....	One oxygen atom
C07D 239/36	.....	as doubly bound atom or as unsubstituted hydroxy radical
C07D 239/38	.....	One sulfur atom
C07D 239/40	.....	as doubly bound sulfur atom or as unsubstituted mercapto radical
C07D 239/42	.....	One nitrogen atom (nitro radicals C07D 239/30 ; benzenesulfonamido-pyrimidines C07D 239/69)
C07D 239/46	....	Two or more oxygen, sulfur or nitrogen atoms (benzenesulfonamido-pyrimidines C07D 239/69)
C07D 239/47	.....	One nitrogen atom and one oxygen or sulfur atom, e.g. cytosine
C07D 239/48	.....	Two nitrogen atoms
C07D 239/49	.....	with an aralkyl radical, or substituted aralkyl radical, attached in position 5, e.g. trimethoprim
C07D 239/50	.....	Three nitrogen atoms
C07D 239/52	.....	Two oxygen atoms

C07D 239/54	.....	as doubly bound oxygen atoms or as unsubstituted hydroxy radicals
C07D 239/545	.....	with other hetero atoms or with carbon atoms having three bonds to hetero atoms with at the most one bond to halogen, directly attached to ring carbon atoms
C07D 239/553	.....	with halogen atoms or nitro radicals directly attached to ring carbon atoms, e.g. fluorouracil
C07D 239/557	.....	with carbon atoms having three bonds to hetero atoms with at the most one bond to halogen, directly attached to ring carbon atoms, e.g. orotic acid
C07D 239/56	.....	One oxygen atom and one sulfur atom
C07D 239/58	.....	Two sulfur atoms
C07D 239/60	.....	Three or more oxygen or sulfur atoms
C07D 239/62	.....	Barbituric acids
C07D 239/64	.....	Salts of organic bases Organic double compounds
C07D 239/66	.....	Thiobarbituric acids
C07D 239/68	.....	Salts or organic bases Organic double compounds
C07D 239/69	....	Benzenesulfonamido-pyrimidines
C07D 239/70	.	condensed with carbocyclic rings or ring systems
C07D 239/72	..	Quinazolines Hydrogenated quinazolines
C07D 239/74	...	with only hydrogen atoms, hydrocarbon or substituted hydrocarbon radicals, attached to ring carbon atoms of the hetero ring
C07D 239/76	....	N-oxides
C07D 239/78	...	with hetero atoms directly attached in position 2
C07D 239/80	....	Oxygen atoms
C07D 239/82	.....	with an aryl radical attached in position 4
C07D 239/84	....	Nitrogen atoms
C07D 239/86	...	with hetero atoms directly attached in position 4
C07D 239/88	....	Oxygen atoms
C07D 239/90	.....	with acyclic radicals attached in positions 2 or 3
C07D 239/91	.....	with aryl or aralkyl radicals attached in positions 2 or 3
C07D 239/92	.....	with hetero atoms directly attached to nitrogen atoms of the hetero ring
C07D 239/93	....	Sulfur atoms
C07D 239/94	....	Nitrogen atoms
C07D 239/95	...	with hetero atoms directly attached in position 2 and 4
C07D 239/96	....	Two oxygen atoms

C07D 241/00 Heterocyclic compounds containing 1,4-diazine or hydrogenated 1,4-diazine rings

NOTE

Piperazines with only hydrogen atoms directly attached to ring carbon atoms are classified in group [C07D 295/00](#)

C07D 241/02	. not condensed with other rings
C07D 241/04	.. having no double bonds between ring members or between ring members and non-ring members
C07D 241/06	.. having one or two double bonds between ring members or between ring members and non-ring members
C07D 241/08	... with oxygen atoms directly attached to ring carbon atoms
C07D 241/10	.. having three double bonds between ring members or between ring members and non-ring members
C07D 241/12	... with only hydrogen atoms, hydrocarbon or substituted hydrocarbon radicals, directly attached to ring carbon atoms
C07D 241/14	... with hetero atoms or with carbon atoms having three bonds to hetero atoms with at the most one bond to halogen, e.g. ester or nitrile radicals, directly attached to ring carbon atoms
C07D 241/16	.... Halogen atoms Nitro radicals
C07D 241/18	.... Oxygen or sulfur atoms
C07D 241/20	.... Nitrogen atoms (nitro radicals C07D 241/16)
C07D 241/22	..... Benzenesulfonamido pyrazines
C07D 241/24	.... Carbon atoms having three bonds to hetero atoms with at the most one bond to halogen, e.g. ester or nitrile radicals
C07D 241/26	..... with nitrogen atoms directly attached to ring carbon atoms
C07D 241/28	..... in which said hetero-bound carbon atoms have double bonds to oxygen, sulfur or nitrogen atoms
C07D 241/30	..... in which said hetero-bound carbon atoms are part of a substructure -C(=X)-X-C(=X)-X- in which X is an oxygen or sulfur atom or an imino radical, e.g. imidoylguanidines
C07D 241/32	..... (Amino-pyrazinoyl) guanidines
C07D 241/34	..... ( Amino-pyrazine carbonamido) guanidines [2,5]
C07D 241/36	. condensed with carbocyclic rings or ring systems
C07D 241/38	.. with only hydrogen or carbon atoms directly attached to the ring nitrogen atoms
C07D 241/40	... Benzopyrazines
C07D 241/42	.... with only hydrogen atoms, hydrocarbon or substituted hydrocarbon radicals, directly attached to carbon atoms of the hetero ring
C07D 241/44	.... with hetero atoms or with carbon atoms having three bonds to hetero atoms with at the most one bond to halogen, e.g. ester or nitrile radicals, directly attached to carbon atoms of the hetero ring
C07D 241/46	... Phenazines
C07D 241/48	.... with hydrocarbon radicals, substituted by nitrogen atoms, directly attached to the ring nitrogen atoms
C07D 241/50	.. with hetero atoms directly attached to ring nitrogen atoms
C07D 241/52	... Oxygen atoms
C07D 241/54	... Nitrogen atoms

C07D 243/00	Heterocyclic compounds containing seven-membered rings having two nitrogen atoms as the only ring hetero atoms
C07D 243/02	. having the nitrogen atoms in positions 1,2
C07D 243/04	. having the nitrogen atoms in positions 1,3
C07D 243/06	. having the nitrogen atoms in positions 1,4
C07D 243/08	.. not condensed with other rings
C07D 243/10	.. condensed with carbocyclic rings or ring systems
C07D 243/12	... 1,5-Benzodiazepines Hydrogenated 1,5-benzodiazepines
C07D 243/14	... 1,4-Benzodiazepines Hydrogenated 1,4-benzodiazepines
C07D 243/16	.... substituted in position 5 by aryl radicals
C07D 243/18	..... substituted in position 2 by nitrogen, oxygen or sulfur atoms
C07D 243/20	..... Nitrogen atoms
C07D 243/22	..... Sulfur atoms
C07D 243/24	..... Oxygen atoms
C07D 243/26	..... Preparation from compounds already containing the benzodiazepine skeleton
C07D 243/28	..... Preparation including building-up the benzodiazepine skeleton from compounds containing no hetero rings
C07D 243/30	..... Preparation including building-up the benzodiazepine skeleton from compounds already containing hetero rings
C07D 243/32	..... containing a phthalimide or hydrogenated phthalimide ring system
C07D 243/34	..... containing a quinazoline or hydrogenated quinazoline ring system
C07D 243/36	..... containing an indole or hydrogenated indole ring system
C07D 243/38	... [b, e]- or [b, f]-condensed with six-membered rings
C07D 245/00	Heterocyclic compounds containing rings of more than seven members having two nitrogen atoms as the only ring hetero atoms
C07D 245/02	. not condensed with other rings
C07D 245/04	. condensed with carbocyclic rings or ring systems
C07D 245/06	.. condensed with one six-membered ring
C07D 247/00	Heterocyclic compounds containing rings having two nitrogen atoms as the only ring hetero atoms, according to more than one of groups C07D 229/00 to C07D 245/00
C07D 247/02	. having the nitrogen atoms in positions 1 and 3

C07D 249/00 **Heterocyclic compounds containing five-membered rings having three nitrogen atoms as the only ring hetero atoms**

- C07D 249/02 . not condensed with other rings
- C07D 249/04 .. 1,2,3-Triazoles
 Hydrogenated 1,2,3-triazoles
- C07D 249/06 ... with aryl radicals directly attached to ring atoms
- C07D 249/08 .. 1,2,4-Triazoles
 Hydrogenated 1,2,4-triazoles
- C07D 249/10 ... with hetero atoms or with carbon atoms having three bonds to hetero atoms with at the most one bond to halogen, e.g. ester or nitrile radicals, directly attached to ring carbon atoms
- C07D 249/12 Oxygen or sulfur atoms
- C07D 249/14 Nitrogen atoms
- C07D 249/16 . condensed with carbocyclic rings or ring systems
- C07D 249/18 .. Benzotriazoles
- C07D 249/20 ... with aryl radicals directly attached in position 2
- C07D 249/22 .. Naphthotriazoles
- C07D 249/24 ... with stilbene radicals attached in position 2

C07D 251/00 **Heterocyclic compounds containing 1,3,5-triazine rings**

- C07D 251/02 . not condensed with other rings
- C07D 251/04 .. having no double bonds between ring members or between ring members and non-ring members
- C07D 251/06 ... with hetero atoms directly attached to ring nitrogen atoms
- C07D 251/08 .. having one double bond between ring members or between a ring member and a non-ring member
- C07D 251/10 .. having two double bonds between ring members or between ring members and non-ring members
- C07D 251/12 .. having three double bonds between ring members or between ring members and non-ring members
- C07D 251/14 ... with hydrogen or carbon atoms directly attached to at least one ring carbon atom
- C07D 251/16 to only one ring carbon atom
- C07D 251/18 with nitrogen atoms directly attached to the two other ring carbon atoms, e.g. guanamines
- C07D 251/20 with no nitrogen atoms directly attached to a ring carbon atom
- C07D 251/22 to two ring carbon atoms
- C07D 251/24 to three ring carbon atoms
- C07D 251/26 ... with only hetero atoms directly attached to ring carbon atoms
- C07D 251/28 Only halogen atoms, e.g. cyanuric chloride
- C07D 251/30 Only oxygen atoms
- C07D 251/32 Cyanuric acid

		Isocyanuric acid
C07D 251/34	.....	Cyanuric or isocyanuric esters
C07D 251/36	.....	having halogen atoms directly attached to ring nitrogen atoms
C07D 251/38	....	Sulfur atoms
C07D 251/40	....	Nitrogen atoms
C07D 251/42	.....	One nitrogen atom
C07D 251/44	.....	with halogen atoms attached to the two other ring carbon atoms
C07D 251/46	.....	with oxygen or sulfur atoms attached to the two other ring carbon atoms
C07D 251/48	.....	Two nitrogen atoms
C07D 251/50	.....	with a halogen atom attached to the third ring carbon atom
C07D 251/52	.....	with an oxygen or sulfur atom attached to the third ring carbon atom
C07D 251/54	.....	Three nitrogen atoms
C07D 251/56	.....	Preparation of melamine
C07D 251/58	.....	from cyanamide, dicyanamide or calcium cyanamide
C07D 251/60	.....	from urea or from carbon dioxide and ammonia
C07D 251/62	.....	Purification of melamine
C07D 251/64	.....	Condensation products of melamine with aldehydes Derivatives thereof (polycondensation products C08G)
C07D 251/66	.....	Derivatives of melamine in which a hetero atom is directly attached to a nitrogen atom of melamine
C07D 251/68	.....	Triazinylamino stilbenes
C07D 251/70	.....	Other substituted melamines
C07D 251/72	.	condensed with carbocyclic rings or ring systems

C07D 253/00 **Heterocyclic compounds containing six-membered rings having three nitrogen atoms as the only ring hetero atoms, not provided for by group [C07D 251/00](#)**

C07D 253/02	.	not condensed with other rings
C07D 253/04	..	1,2,3-Triazines
C07D 253/06	..	1,2,4-Triazines
C07D 253/065	...	having three double bonds between ring members or between ring members and non-ring members
C07D 253/07	....	with hetero atoms, or with carbon atoms having three bonds to hetero atoms with at the most one bond to halogen, e.g. ester or nitrile radicals, directly attached to ring carbon atoms
C07D 253/075	.....	Two hetero atoms, in positions 3 and 5
C07D 253/08	.	condensed with carbocyclic rings or ring systems
C07D 253/10	.	Condensed 1, 2,4-triazines Hydrogenated condensed 1,2,4-triazines

C07D 255/00 **Heterocyclic compounds containing rings having three nitrogen atoms as the only ring hetero atoms, not provided for by groups [C07D 249/00](#) to [C07D 253/00](#)**

C07D 255/02 . not condensed with other rings

C07D 255/04 . condensed with carbocyclic rings or ring systems

C07D 257/00 Heterocyclic compounds containing rings having four nitrogen atoms as the only ring hetero atoms

C07D 257/02 . not condensed with other rings

C07D 257/04 . . Five-membered rings

C07D 257/06 . . . with nitrogen atoms directly attached to the ring carbon atom

C07D 257/08 . . Six-membered rings

C07D 257/10 . condensed with carbocyclic rings or ring systems

C07D 257/12 . . Six-membered rings having four nitrogen atoms

C07D 259/00 Heterocyclic compounds containing rings having more than four nitrogen atoms as the only ring hetero atoms

Guide heading: Heterocyclic compounds having nitrogen and oxygen as the only ring hetero atoms

C07D 261/00 Heterocyclic compounds containing 1,2-oxazole or hydrogenated 1,2-oxazole rings

C07D 261/02 . not condensed with other rings

C07D 261/04 . . having one double bond between ring members or between a ring member and a non-ring member

C07D 261/06 . . having two or more double bonds between ring members or between ring members and non-ring members

C07D 261/08 . . . with only hydrogen atoms, hydrocarbon or substituted hydrocarbon radicals, directly attached to ring carbon atoms

C07D 261/10 . . . with hetero atoms or with carbon atoms having three bonds to hetero atoms with at the most one bond to halogen, e.g. ester or nitrile radicals, directly attached to ring carbon atoms

C07D 261/12 Oxygen atoms

C07D 261/14 Nitrogen atoms

C07D 261/16 Benzene-sulphonamido isoxazoles

C07D 261/18 Carbon atoms having three bonds to hetero atoms, with at the most one bond to halogen

C07D 261/20 . condensed with carbocyclic rings or ring systems

C07D 263/00 Heterocyclic compounds containing 1,3-oxazole or hydrogenated 1,3-oxazole rings

C07D 263/02 . not condensed with other rings

C07D 263/04 . . having no double bonds between ring members or between ring members and

		non-ring members
C07D 263/06	...	with hydrocarbon radicals, substituted by oxygen atoms, attached to ring carbon atoms
C07D 263/08	..	having one double bond between ring members or between a ring member and a non-ring member
C07D 263/10	...	with only hydrogen atoms, hydrocarbon or substituted hydrocarbon radicals, directly attached to ring carbon atoms
C07D 263/12	....	with radicals containing only hydrogen and carbon atoms
C07D 263/14	....	with radicals substituted by oxygen atoms
C07D 263/16	...	with hetero atoms or with carbon atoms having three bonds to hetero atoms with at the most one bond to halogen, e.g. ester or nitrile radicals, directly attached to ring carbon atoms
C07D 263/18	....	Oxygen atoms
C07D 263/20	.....	attached in position 2
C07D 263/22	.....	with only hydrogen atoms or radicals containing only hydrogen and carbon atoms, directly attached to other ring carbon atoms
C07D 263/24	.....	with hydrocarbon radicals, substituted by oxygen atoms, attached to other ring carbon atoms
C07D 263/26	.....	with hetero atoms or acyl radicals directly attached to the ring nitrogen atom
C07D 263/28	....	Nitrogen atoms not forming part of a nitro radical
C07D 263/30	..	having two or three double bonds between ring members or between ring members and non-ring members
C07D 263/32	...	with only hydrogen atoms, hydrocarbon or substituted hydrocarbon radicals, directly attached to ring carbon atoms
C07D 263/34	...	with hetero atoms or with carbon atoms having three bonds to hetero atoms with at the most one bond to halogen, e.g. ester or nitrile radicals, directly attached to ring carbon atoms
C07D 263/36	....	One oxygen atom
C07D 263/38	.....	attached in position 2
C07D 263/40	.....	attached in position 4
C07D 263/42	.....	attached in position 5
C07D 263/44	....	Two oxygen atoms
C07D 263/46	....	Sulfur atoms
C07D 263/48	....	Nitrogen atoms not forming part of a nitro radical
C07D 263/50	.....	Benzene-sulphonamido oxazoles
C07D 263/52	.	condensed with carbocyclic rings or ring systems
C07D 263/54	..	Benzoxazoles Hydrogenated benzoxazoles
C07D 263/56	...	with only hydrogen atoms, hydrocarbon or substituted hydrocarbon radicals, directly attached in position 2
C07D 263/57	....	Aryl or substituted aryl radicals
C07D 263/58	...	with hetero atoms or with carbon atoms having three bonds to hetero atoms with at the most one bond to halogen, e.g. ester or nitrile radicals, directly attached in position 2
C07D 263/60	..	Naphthoxazoles

Hydrogenated naphthoxazoles

- C07D 263/62 . . having two or more ring systems containing condensed 1,3-oxazole rings
- C07D 263/64 . . . linked in positions 2 and 2' by chains containing six-membered aromatic rings or ring systems containing such rings

C07D 265/00 Heterocyclic compounds containing six-membered rings having one nitrogen atom and one oxygen atom as the only ring hetero atoms

NOTE

Morpholines having only hydrogen atoms attached to the ring carbon atoms are classified in [C07D 295/00](#)

- C07D 265/02 . 1,2-Oxazines
Hydrogenated 1,2-oxazines
- C07D 265/04 . 1,3-Oxazines
Hydrogenated 1,3-oxazines
- C07D 265/06 . . not condensed with other rings
- C07D 265/08 . . . having one double bond between ring members or between a ring member and a non-ring member
- C07D 265/10 with oxygen atoms directly attached to ring carbon atoms
- C07D 265/12 . . condensed with carbocyclic rings or ring systems
- C07D 265/14 . . . condensed with one six-membered ring
- C07D 265/16 with only hydrogen or carbon atoms directly attached in positions 2 and 4
- C07D 265/18 with hetero atoms directly attached in position 2
- C07D 265/20 with hetero atoms directly attached in position 4
- C07D 265/22 Oxygen atoms
- C07D 265/24 with hetero atoms directly attached in positions 2 and 4
- C07D 265/26 Two oxygen atoms, e.g. isatoic anhydride
- C07D 265/28 . 1,4-Oxazines
Hydrogenated 1,4-oxazines
- C07D 265/30 . . not condensed with other rings
- C07D 265/32 . . . with oxygen atoms directly attached to ring carbon atoms
- C07D 265/33 Two oxygen atoms, in positions 3 and 5
- C07D 265/34 . . condensed with carbocyclic rings
- C07D 265/36 . . . condensed with one six-membered ring
- C07D 265/38 . . . [b, e]-condensed with two six-membered rings

C07D 267/00 Heterocyclic compounds containing rings of more than six members having one nitrogen atom and one oxygen atom as the only ring hetero atoms

- C07D 267/02 . Seven-membered rings
- C07D 267/04 . . having the hetero atoms in positions 1 and 2
- C07D 267/06 . . having the hetero atoms in positions 1 and 3

- C07D 267/08 . . . having the hetero atoms in positions 1 and 4
- C07D 267/10 . . . not condensed with other rings
- C07D 267/12 . . . condensed with carbocyclic rings or ring systems
- C07D 267/14 condensed with one six-membered ring
- C07D 267/16 condensed with two six-membered rings
- C07D 267/18 [b, e]-condensed
- C07D 267/20 [b, f]-condensed

- C07D 267/22 . Eight-membered rings

- C07D 269/00** **Heterocyclic compounds containing rings having one nitrogen atom and one oxygen atom as the only ring hetero atoms according to more than one of groups [C07D 261/00](#) to [C07D 267/00](#)**

- C07D 269/02 . having the hetero atoms in positions 1 and 3

- C07D 271/00** **Heterocyclic compounds containing five-membered rings having two nitrogen atoms and one oxygen atom as the only ring hetero atoms**

- C07D 271/02 . not condensed with other rings
- C07D 271/04 . . 1,2,3-Oxadiazoles
Hydrogenated 1,2,3-oxadiazoles
- C07D 271/06 . . 1,2,4-Oxadiazoles
Hydrogenated 1,2,4-oxadiazoles
- C07D 271/07 . . . with oxygen, sulfur or nitrogen atoms, directly attached to ring carbon atoms, the nitrogen atoms not forming part of a nitro radical
- C07D 271/08 . . 1,2,5-Oxadiazoles
Hydrogenated 1,2,5-oxadiazoles
- C07D 271/10 . . 1,3,4-Oxadiazoles
Hydrogenated 1,3,4-oxadiazoles
- C07D 271/107 . . . with two aryl or substituted aryl radicals attached in positions 2 and 5
- C07D 271/113 . . . with oxygen, sulfur or nitrogen atoms, directly attached to ring carbon atoms, the nitrogen atoms not forming part of a nitro radical

- C07D 271/12 . condensed with carbocyclic rings or ring systems

- C07D 273/00** **Heterocyclic compounds containing rings having nitrogen and oxygen atoms as the only ring hetero atoms, not provided for by groups [C07D 261/00](#) to [C07D 271/00](#)**

- C07D 273/01 . having one nitrogen atom

- C07D 273/02 . having two nitrogen atoms and only one oxygen atom
- C07D 273/04 . . Six-membered rings
- C07D 273/06 . . Seven-membered rings

- C07D 273/08 . having two nitrogen atoms and more than one oxygen atom

Guide heading:	Heterocyclic compounds having nitrogen and sulfur as the only ring hetero atoms
C07D 275/00	Heterocyclic compounds containing 1,2-thiazole or hydrogenated 1,2-thiazole rings
C07D 275/02	. not condensed with other rings
C07D 275/03	. . with hetero atoms or with carbon atoms having three bonds to hetero atoms with at the most one bond to halogen, e.g. ester or nitrile radicals, directly attached to ring carbon atoms
C07D 275/04	. condensed with carbocyclic rings or ring systems
C07D 275/06	. . with hetero atoms directly attached to the ring sulfur atom
C07D 277/00	Heterocyclic compounds containing 1,3-thiazole or hydrogenated 1,3-thiazole rings
C07D 277/02	. not condensed with other rings
C07D 277/04	. . having no double bonds between ring members or between ring members and non-ring members
C07D 277/06	. . . with carbon atoms having three bonds to hetero atoms with at the most one bond to halogen, e.g. ester or nitrile radicals, directly attached to ring carbon atoms
C07D 277/08	. . having one double bond between ring members or between a ring member and a non-ring member
C07D 277/10	. . . with only hydrogen atoms, hydrocarbon or substituted hydrocarbon radicals, directly attached to ring carbon atoms
C07D 277/12	. . . with hetero atoms or with carbon atoms having three bonds to hetero atoms, with at the most one bond to halogen, e.g. ester or nitrile radicals, directly attached to ring carbon atoms
C07D 277/14	. . . . Oxygen atoms
C07D 277/16	. . . . Sulfur atoms
C07D 277/18	. . . . Nitrogen atoms
C07D 277/20	. . having two or three double bonds between ring members or between ring members and non-ring members
C07D 277/22	. . . with only hydrogen atoms, hydrocarbon or substituted hydrocarbon radicals, directly attached to ring carbon atoms
C07D 277/24	. . . . Radicals substituted by oxygen atoms
C07D 277/26	. . . . Radicals substituted by sulfur atoms
C07D 277/28	. . . . Radicals substituted by nitrogen atoms
C07D 277/30	. . . . Radicals substituted by carbon atoms having three bonds to hetero atoms with at the most one bond to halogen, e.g. ester or nitrile radicals
C07D 277/32	. . . with hetero atoms or with carbon atoms having three bonds to hetero atoms with at the most one bond to halogen, e.g. ester or nitrile radicals, directly attached to ring carbon atoms
C07D 277/34	. . . . Oxygen atoms
C07D 277/36	. . . . Sulfur atoms
C07D 277/38	. . . . Nitrogen atoms

C07D 277/40	.....	Unsubstituted amino or imino radicals
C07D 277/42	.....	Amino or imino radicals substituted by hydrocarbon or substituted hydrocarbon radicals
C07D 277/44	.....	Acylated amino or imino radicals
C07D 277/46	.....	by carboxylic acids, or sulfur or nitrogen analogues thereof
C07D 277/48	.....	by radicals derived from carbonic acid, or sulfur or nitrogen analogues thereof, e.g. carbonylguanidines
C07D 277/50	.....	Nitrogen atoms bound to hetero atoms (nitro radicals C07D 277/58)
C07D 277/52	.....	to sulfur atoms, e.g. sulfonamides
C07D 277/54	....	Nitrogen and either oxygen or sulfur atoms
C07D 277/56	....	Carbon atoms having three bonds to hetero atoms with at the most one bond to halogen
C07D 277/58	....	Nitro radicals
C07D 277/587	...	with aliphatic hydrocarbon radicals substituted by carbon atoms having three bonds to hetero atoms with at the most one bond to halogen, e.g. ester or nitrile radicals, directly attached to ring carbon atoms, said aliphatic radicals being substituted in the alpha-position to the ring by a hetero atom, e.g. (image) with $m \geq 0$, Z being a singly or a doubly bound hetero atom
C07D 277/593	....	Z being doubly bound oxygen or doubly bound nitrogen, which nitrogen is part of a possibly substituted oximino radical
C07D 277/60	.	condensed with carbocyclic rings or ring-systems
C07D 277/62	..	Benzothiazoles
C07D 277/64	...	with only hydrocarbon or substituted hydrocarbon radicals attached in position 2
C07D 277/66	....	with aromatic rings or ring systems directly attached in position 2
C07D 277/68	...	with hetero atoms or with carbon atoms having three bonds to hetero atoms with at the most one bond to halogen, e.g. ester or nitrile radicals, directly attached in position 2
C07D 277/70	....	Sulfur atoms
C07D 277/72	.....	2-Mercaptobenzothiazole
C07D 277/74	.....	Sulfur atoms substituted by carbon atoms
C07D 277/76	.....	Sulfur atoms attached to a second hetero atom
C07D 277/78	.....	to a sulfur atom
C07D 277/80	.....	to a nitrogen atom
C07D 277/82	....	Nitrogen atoms
C07D 277/84	..	Naphthothiazoles

[C07D 279/00](#) Heterocyclic compounds containing six-membered rings having one nitrogen atom and one sulfur atom as the only ring hetero atoms

NOTE

Thiomorpholines having only hydrogen atoms attached to the ring carbon atoms are classified in [C07D 295/00](#)

C07D 279/02	.	1,2-Thiazines Hydrogenated 1,2-thiazines
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- C07D 279/04
 - . 1,3-Thiazines
 - Hydrogenated 1,3-thiazines
- C07D 279/06
 - .. not condensed with other rings
- C07D 279/08
 - .. condensed with carbocyclic rings or ring systems
- C07D 279/10
 - . 1,4-Thiazines
 - Hydrogenated 1,4-thiazines
- C07D 279/12
 - .. not condensed with other rings
- C07D 279/14
 - .. condensed with carbocyclic rings or ring systems
- C07D 279/16
 - ... condensed with one six-membered ring
- C07D 279/18
 - ... [b, e]-condensed with two six-membered rings
- C07D 279/20
 - with hydrogen atoms directly attached to the ring nitrogen atom
- C07D 279/22
 - with carbon atoms directly attached to the ring nitrogen atom
- C07D 279/24
 - with hydrocarbon radicals, substituted by amino radicals, attached to the ring nitrogen atom
- C07D 279/26
 - without other substituents attached to the ring system
- C07D 279/28
 - with other substituents attached to the ring system
- C07D 279/30
 - with acyl radicals attached to the ring nitrogen atom
- C07D 279/32
 - with hetero atoms directly attached to the ring nitrogen atom
- C07D 279/34
 - with hetero atoms directly attached to the ring sulfur atom
- C07D 279/36
 - ... [b, e]-condensed, at least one with a further condensed benzene ring
- C07D 281/00**
Heterocyclic compounds containing rings of more than six members having one nitrogen atom and one sulfur atom as the only ring hetero atoms
- C07D 281/02
 - . Seven-membered rings
- C07D 281/04
 - .. having the hetero atoms in positions 1 and 4
- C07D 281/06
 - ... not condensed with other rings
- C07D 281/08
 - ... condensed with carbocyclic rings or ring systems
- C07D 281/10
 - condensed with one six-membered ring
- C07D 281/12
 - condensed with two six-membered rings
- C07D 281/14
 - [b, e]-condensed
- C07D 281/16
 - [b, f]-condensed
- C07D 281/18
 - . Eight-membered rings
- C07D 283/00**
Heterocyclic compounds containing rings having one nitrogen atom and one sulfur atom as the only ring hetero atoms, according to more than one of groups [C07D 275/00](#) to [C07D 281/00](#)
- C07D 283/02
 - . having the hetero atoms in positions 1 and 3
- C07D 285/00**
Heterocyclic compounds containing rings having nitrogen and sulfur atoms as the only ring hetero atoms, not provided for by groups [C07D 275/00](#) to [C07D 283/00](#)

C07D 285/01	. Five-membered rings
C07D 285/02	.. Thiadiazoles Hydrogenated thiadiazoles
C07D 285/04	... not condensed with other rings
C07D 285/06	.... 1,2,3-Thiadiazoles Hydrogenated 1,2,3-thiadiazoles
C07D 285/08	.... 1,2,4-Thiadiazoles Hydrogenated 1,2,4-thiadiazoles
C07D 285/10	.... 1,2,5-Thiadiazoles Hydrogenated 1,2,5-thiadiazoles
C07D 285/12	.... 1,3,4-Thiadiazoles Hydrogenated 1,3,4-thiadiazoles
C07D 285/125	..... with oxygen, sulfur or nitrogen atoms, directly attached to ring carbon atoms, the nitrogen atoms not forming part of a nitro radical
C07D 285/13	..... Oxygen atoms
C07D 285/135	..... Nitrogen atoms
C07D 285/14	... condensed with carbocyclic rings or ring systems
C07D 285/15	. Six-membered rings
C07D 285/16	.. Thiadiazines Hydrogenated thiadiazines
C07D 285/18	... 1,2,4-Thiadiazines Hydrogenated 1,2,4-thiadiazines
C07D 285/20	.... condensed with carbocyclic rings or ring systems
C07D 285/22	..... condensed with one six-membered ring
C07D 285/24	..... with oxygen atoms directly attached to the ring sulfur atom
C07D 285/26	..... substituted in position 6 or 7 by sulfamoyl or substituted sulfamoyl radicals
C07D 285/28	..... with only hydrogen atoms or radicals containing only hydrogen and carbon atoms, directly attached in position 3
C07D 285/30	..... with hydrocarbon radicals, substituted by hetero atoms attached in position 3
C07D 285/32	..... with hetero atoms or with carbon atoms having three bonds to hetero atoms with at the most one bond to halogen, e.g. ester or nitrile radicals, directly attached in position 3
C07D 285/34	... 1,3,5-Thiadiazines Hydrogenated 1,3,5-thiadiazines
C07D 285/36	. Seven-membered rings
C07D 285/38	. Eight-membered rings
C07D 291/00	Heterocyclic compounds containing rings having nitrogen, oxygen and sulfur atoms as the only ring hetero atoms
C07D 291/02	. not condensed with other rings
C07D 291/04	.. Five-membered rings

- C07D 291/06 . . Six-membered rings
- C07D 291/08 . condensed with carbocyclic rings or ring systems
- C07D 293/00 Heterocyclic compounds containing rings having nitrogen and selenium or nitrogen and tellurium, with or without oxygen or sulfur atoms, as the ring hetero atoms**
- C07D 293/02 . not condensed with other rings
- C07D 293/04 . . Five-membered rings
- C07D 293/06 . . . Selenazoles
Hydrogenated selenazoles
- C07D 293/08 . . Six-membered rings
- C07D 293/10 . condensed with carbocyclic rings or ring systems
- C07D 293/12 . . Selenazoles
Hydrogenated selenazoles
- C07D 295/00 Heterocyclic compounds containing polymethylene-imine rings with at least five ring members, 3-azabicyclo [3.2.2.] nonane, piperazine, morpholine or thiomorpholine rings, having only hydrogen atoms directly attached to the ring carbon atoms**
- C07D 295/02 . containing only hydrogen and carbon atoms in addition to the ring hetero elements
- C07D 295/023 . . Preparation
Separation
Stabilisation
Use of additives
- C07D 295/027 . . containing only one hetero ring
- C07D 295/03 . . . with the ring nitrogen atoms directly attached to acyclic carbon atoms
- C07D 295/033 . . . with the ring nitrogen atoms directly attached to carbocyclic rings
- C07D 295/037 . . with quaternary ring nitrogen atoms
- C07D 295/04 . with substituted hydrocarbon radicals attached to ring nitrogen atoms
- C07D 295/06 . . substituted by halogen atoms or nitro radicals
- C07D 295/067 . . . with the ring nitrogen atoms and the substituents attached to the same carbon chain, which is not interrupted by carbocyclic rings
- C07D 295/073 . . . with the ring nitrogen atoms and the substituents separated by carbocyclic rings or by carbon chains interrupted by carbocyclic rings
- C07D 295/08 . . substituted by singly bound oxygen or sulfur atoms
- C07D 295/084 . . . with the ring nitrogen atoms and the oxygen or sulfur atoms attached to the same carbon chain, which is not interrupted by carbocyclic rings
- C07D 295/088 to an acyclic saturated chain
- C07D 295/092 with aromatic radicals attached to the chain
- C07D 295/096 . . . with the ring nitrogen atoms and the oxygen or sulfur atoms separated by carbocyclic rings or by carbon chains interrupted by carbocyclic rings
- C07D 295/10 . . substituted by doubly bound oxygen or sulfur atoms ([acylated ring nitrogen atoms C07D 295/16](#))

- C07D 295/104 . . . with the ring nitrogen atoms and the doubly bound oxygen or sulfur atoms attached to the same carbon chain, which is not interrupted by carbocyclic rings
- C07D 295/108 to an acyclic saturated chain
- C07D 295/112 . . . with the ring nitrogen atoms and the doubly bound oxygen or sulfur atoms separated by carbocyclic rings or by carbon chains interrupted by carbocyclic rings
- C07D 295/116 with the doubly bound oxygen or sulfur atoms directly attached to a carbocyclic ring
- C07D 295/12 . . substituted by singly or doubly bound nitrogen atoms ([nitro radicals C07D 295/06](#))
- C07D 295/125 . . . with the ring nitrogen atoms and the substituent nitrogen atoms attached to the same carbon chain, which is not interrupted by carbocyclic rings
- C07D 295/13 to an acyclic saturated chain
- C07D 295/135 . . . with the ring nitrogen atoms and the substituent nitrogen atoms separated by carbocyclic rings or by carbon chains interrupted by carbocyclic rings
- C07D 295/14 . . substituted by carbon atoms having three bonds to hetero atoms with at the most one bond to halogen, e.g. ester or nitrile radicals
- C07D 295/145 . . . with the ring nitrogen atoms and the carbon atoms with three bonds to hetero atoms attached to the same carbon chain, which is not interrupted by carbocyclic rings
- C07D 295/15 to an acyclic saturated chain
- C07D 295/155 . . . with the ring nitrogen atoms and the carbon atoms with three bonds to hetero atoms separated by carbocyclic rings or by carbon chains interrupted by carbocyclic rings

- C07D 295/16 . acylated on ring nitrogen atoms
- C07D 295/18 . . by radicals derived from carboxylic acids, or sulfur or nitrogen analogues thereof
- C07D 295/182 . . . Radicals derived from carboxylic acids
- C07D 295/185 from aliphatic carboxylic acids
- C07D 295/192 from aromatic carboxylic acids
- C07D 295/194 . . . Radicals derived from thio- or thiono carboxylic acids
- C07D 295/195 . . . Radicals derived from nitrogen analogues of carboxylic acids
- C07D 295/20 . . by radicals derived from carbonic acid, or sulfur or nitrogen analogues thereof
- C07D 295/205 . . . Radicals derived from carbonic acid
- C07D 295/21 . . . Radicals derived from sulfur analogues of carbonic acid
- C07D 295/215 . . . Radicals derived from nitrogen analogues of carbonic acid

- C07D 295/22 . with hetero atoms directly attached to ring nitrogen atoms
- C07D 295/24 . . Oxygen atoms
- C07D 295/26 . . Sulfur atoms
- C07D 295/28 . . Nitrogen atoms
- C07D 295/30 . . . non-acylated
- C07D 295/32 . . . acylated with carboxylic or carbonic acids, or their nitrogen or sulfur analogues

Guide heading: Heterocyclic compounds having oxygen atoms with or without sulfur, selenium or tellurium, as ring hetero atoms

C07D 301/00**Preparation of oxiranes**

- C07D 301/02 . Synthesis of the oxirane ring
- C07D 301/03 .. by oxidation of unsaturated compounds, or of mixtures of unsaturated and saturated compounds
 - C07D 301/04 ... with air or molecular oxygen
 - C07D 301/06 in the liquid phase
 - C07D 301/08 in the gaseous phase
 - C07D 301/10 with catalysts containing silver or gold
 - C07D 301/12 ... with hydrogen peroxide or inorganic peroxides or peracids
 - C07D 301/14 ... with organic peracids, or salts, anhydrides or esters thereof
 - C07D 301/16 formed in situ e.g. from carboxylic acids and hydrogen peroxide
 - C07D 301/18 from polybasic carboxylic acids
 - C07D 301/19 ... with organic hydroperoxides
- C07D 301/22 .. by oxidation of the saturated compounds with air or molecular oxygen (of mixtures of unsaturated compounds [C07D 301/04](#))
- C07D 301/24 .. by splitting off HAL-Y from compounds containing the radical HAL-C-C-OY
- C07D 301/26 ... Y being hydrogen
- C07D 301/27 . Condensation of epihalohydrins or halohydrins with compounds containing active hydrogen atoms ([macromolecular compounds C08](#))
- C07D 301/28 .. by reaction with hydroxyl radicals
- C07D 301/30 .. by reaction with carboxyl radicals
- C07D 301/32 . Separation
Purification
- C07D 301/36 . Use of additives, e.g. for stabilisation

C07D 303/00**Compounds containing three-membered rings having one oxygen atom as the only ring heteroatom**

- C07D 303/02 . Compounds containing oxirane rings
 - C07D 303/04 .. containing only hydrogen and carbon atoms in addition to the ring oxygen atoms
 - C07D 303/06 ... in which the oxirane rings are condensed with a carbocyclic ring system having three or more relevant rings
 - C07D 303/08 .. with hydrocarbon radicals, substituted by halogen atoms, nitro radicals or nitroso radicals
 - C07D 303/10 ... in which the oxirane rings are condensed with a carbocyclic ring system having three or more relevant rings ([steroids C07J](#))
 - C07D 303/12 .. with hydrocarbon radicals substituted by singly or doubly bound oxygen atoms
 - C07D 303/14 ... by free hydroxyl radicals
 - C07D 303/16 ... by esterified hydroxyl radicals
 - C07D 303/17 containing oxirane rings condensed with carbocyclic ring systems having three or more relevant rings

- C07D 303/18 . . . by etherified hydroxyl radicals
- C07D 303/20 Ethers with hydroxy compounds containing no oxirane rings
- C07D 303/22 with monohydroxy compounds
- C07D 303/23 Oxiranylmethyl ethers of compounds having one hydroxy group bound to a six-membered aromatic ring, the oxiranylmethyl radical not being further substituted, i.e. [image]
- C07D 303/24 with polyhydroxy compounds
- C07D 303/26 having one or more free hydroxyl radicals
- C07D 303/27 having all hydroxyl radicals etherified with oxirane containing compounds
- C07D 303/28 Ethers with hydroxy compounds containing oxirane rings
- C07D 303/30 ethers of oxirane-containing polyhydroxy compounds in which all hydroxyl radicals are etherified with oxirane-containing hydroxy compounds
- C07D 303/31 in which the oxirane rings are condensed with a carbocyclic ring system having three or more relevant rings
- C07D 303/32 . . . by aldehydo- or ketonic radicals
- C07D 303/34 . . with hydrocarbon radicals substituted by sulfur, selenium or tellurium atoms
- C07D 303/36 . . with hydrocarbon radicals substituted by nitrogen atoms ([nitro](#), [nitroso radicals C07D 303/08](#))
- C07D 303/38 . . with hydrocarbon radicals substituted by carbon atoms having three bonds to heteroatoms with at the most one bond to halogen, e.g. ester or nitrile radicals
- C07D 303/40 . . . by ester radicals
- C07D 303/42 Acyclic compounds having a chain of seven or more carbon atoms, e.g. epoxidised fats
- C07D 303/44 Esterified with oxirane-containing hydroxy compounds
- C07D 303/46 . . . by amide or nitrile radicals
- C07D 303/48 . . with hetero atoms or with carbon atoms having three bonds to hetero atoms with at the most one bond to halogen, directly attached to ring carbon atoms, e.g. ester or nitrile radicals

- C07D 305/00 Heterocyclic compounds containing four-membered rings having one oxygen atom as the only ring hetero atom**

- C07D 305/02 . not condensed with other rings
- C07D 305/04 . . having no double bonds between ring members or between ring members and non-ring members
- C07D 305/06 . . . with only hydrogen atoms, hydrocarbon or substituted hydrocarbon radicals, directly attached to the ring atoms
- C07D 305/08 . . . with hetero atoms or with carbon atoms having three bonds to hetero atoms with at the most one bond to halogen, e.g. ester or nitrile radicals, directly attached to ring atoms
- C07D 305/10 . . having one or more double bonds between ring members or between ring members and non-ring members
- C07D 305/12 . . . Beta-lactones
- C07D 305/14 . condensed with carbocyclic rings or ring systems

C07D 307/00	Heterocyclic compounds containing five-membered rings having one oxygen atom as the only ring hetero atom
C07D 307/02	. not condensed with other rings
C07D 307/04	.. having no double bonds between ring members or between ring members and non-ring members
C07D 307/06	... with only hydrogen atoms or radicals containing only hydrogen and carbon atoms, directly attached to ring carbon atoms
C07D 307/08	.... Preparation of tetrahydrofuran
C07D 307/10	... with substituted hydrocarbon radicals attached to ring carbon atoms
C07D 307/12	.... Radicals substituted by oxygen atoms
C07D 307/14	.... Radicals substituted by nitrogen atoms not forming part of a nitro radical
C07D 307/16	.... Radicals substituted by carbon atoms having three bonds to hetero atoms, with at the most one bond to halogen, e.g. ester or nitrile radicals
C07D 307/18	... with hetero atoms or with carbon atoms having three bonds to hetero atoms with at the most one bond to halogen, e.g. ester or nitrile radicals, directly attached to ring carbon atoms
C07D 307/20	.... Oxygen atoms
C07D 307/22	.... Nitrogen atoms not forming part of a nitro radical
C07D 307/24	.... Carbon atoms having three bonds to hetero atoms with at the most one bond to halogen
C07D 307/26	.. having one double bond between ring members or between a ring member and a non-ring member
C07D 307/28	... with only hydrogen atoms, hydrocarbon or substituted hydrocarbon radicals, directly attached to ring carbon atoms
C07D 307/30	... with hetero atoms or with carbon atoms having three bonds to hetero atoms with at the most one bond to halogen, e.g. ester or nitrile radicals, directly attached to ring carbon atoms
C07D 307/32	.... Oxygen atoms
C07D 307/33	..... in position 2, the oxygen atom being in its keto or unsubstituted enol form
C07D 307/34	.. having two or three double bonds between ring members or between ring members and non-ring members
C07D 307/36	... with only hydrogen atoms or radicals containing only hydrogen and carbon atoms, directly attached to ring carbon atoms
C07D 307/38	... with substituted hydrocarbon radicals attached to ring carbon atoms
C07D 307/40	.... Radicals substituted by oxygen atoms
C07D 307/42	..... Singly bound oxygen atoms (two oxygen atoms bound to the same carbon atom C07D 307/46)
C07D 307/44	..... Furfuryl alcohol
C07D 307/45	..... Oxygen atoms acylated by a cyclopropane containing carboxylic acyl radical, e.g. chrysanthemumates
C07D 307/46	..... Doubly bound oxygen atoms, or two oxygen atoms singly bound to the same carbon atom
C07D 307/48	..... Furfural
C07D 307/50	..... Preparation from natural products
C07D 307/52	.... Radicals substituted by nitrogen atoms not forming part of a nitro radical

C07D 307/54	....	Radicals substituted by carbon atoms having three bonds to hetero atoms, with at the most one bond to halogen, e.g. ester or nitrile radicals
C07D 307/56	...	with hetero atoms or with carbon atoms having three bonds to hetero atoms with at the most one bond to halogen, e.g. ester or nitrile radicals, directly attached to ring carbon atoms
C07D 307/58	....	One oxygen atom, e.g. butenolide
C07D 307/60	....	Two oxygen atoms, e.g. succinic anhydride
C07D 307/62	....	Three oxygen atoms, e.g. ascorbic acid
C07D 307/64	....	Sulfur atoms
C07D 307/66	....	Nitrogen atoms (nitro radicals C07D 307/70)
C07D 307/68	....	Carbon atoms having three bonds to hetero atoms with at the most one bond to halogen
C07D 307/70	....	Nitro radicals
C07D 307/71	.....	attached in position 5
C07D 307/72	.....	with hydrocarbon radicals, substituted by nitrogen-containing radicals, attached in position 2
C07D 307/73	.....	by amino or imino, or substituted amino or imino radicals
C07D 307/74	.....	by hydrazino or hydrazono or such substituted radicals
C07D 307/75	.....	having carboxylic acyl radicals or their thio or nitrogen analogues directly attached to the hydrazino or hydrazono radical, e.g. hydrazides
C07D 307/76	.....	having carbonic acyl radicals or their thio or nitrogen analogues directly attached to the hydrazino or hydrazono radical, e.g. semicarbazides
C07D 307/77	.	ortho- or peri-condensed with carbocyclic rings or ring systems
C07D 307/78	..	Benzo [b] furans Hydrogenated benzo [b] furans
C07D 307/79	...	with only hydrogen atoms, hydrocarbon or substituted hydrocarbon radicals directly attached to carbon atoms of the hetero ring
C07D 307/80	....	Radicals substituted by oxygen atoms
C07D 307/81	....	Radicals substituted by nitrogen atoms not forming part of a nitro radical
C07D 307/82	...	with hetero atoms or with carbon atoms having three bonds to hetero atoms with at the most one bond to halogen, e.g. ester or nitrile radicals, directly attached to carbon atoms of the hetero ring
C07D 307/83	....	Oxygen atoms
C07D 307/84	....	Carbon atoms having three bonds to hetero atoms with at the most one bond to halogen
C07D 307/85	.....	attached in position 2
C07D 307/86	...	with an oxygen atom directly attached in position 7
C07D 307/87	..	Benzo [c] furans Hydrogenated benzo [c] furans
C07D 307/88	...	with one oxygen atom directly attached in position 1 or 3
C07D 307/885	....	3,3-Diphenylphthalides
C07D 307/89	...	with two oxygen atoms directly attached in positions 1 and 3
C07D 307/90	...	with an oxygen atom in position 1 and a nitrogen atom in position 3, or vice-versa

- C07D 307/91 . . Dibenzofurans
Hydrogenated dibenzofurans
- C07D 307/92 . . Naphthofurans
Hydrogenated naphthofurans
- C07D 307/93 . . condensed with a ring other than six-membered
- C07D 307/935 . . . Not further condensed cyclopenta [b] furans or hydrogenated cyclopenta [b] furans
- C07D 307/937 . . . with hydrocarbon or substituted hydrocarbon radicals directly attached in position 2, e.g. prostacyclins
- C07D 307/94 . spiro-condensed with carbocyclic rings or ring systems, e.g. griseofulvins
- C07D 309/00 Heterocyclic compounds containing six-membered rings having one oxygen atom as the only ring hetero atom, not condensed with other rings**
- C07D 309/02 . having no double bonds between ring members or between ring members and non-ring members
- C07D 309/04 . . with only hydrogen atoms, hydrocarbon or substituted hydrocarbon radicals, directly attached to ring carbon atoms
- C07D 309/06 . . . Radicals substituted by oxygen atoms
- C07D 309/08 . . with hetero atoms or with carbon atoms having three bonds to hetero atoms with at the most one bond to halogen, e.g. ester or nitrile radicals, directly attached to ring carbon atoms
- C07D 309/10 . . . Oxygen atoms
- C07D 309/12 . . . Only hydrogen atoms and one oxygen atom directly attached to ring carbon atoms, e.g. tetrahydropyranyl ethers
- C07D 309/14 . . . Nitrogen atoms not forming part of a nitro radical { nitro radical [C07D 309/08](#) }
- C07D 309/16 . having one double bond between ring members or between a ring member and a non-ring member
- C07D 309/18 . . containing only hydrogen and carbon atoms in addition to the ring hetero atom
- C07D 309/20 . . with hydrogen atoms and substituted hydrocarbon radicals directly attached to ring carbon atoms
- C07D 309/22 . . . Radicals substituted by oxygen atoms
- C07D 309/24 . . . Methylol radicals
- C07D 309/26 . . . Carboxaldehyde radicals
- C07D 309/28 . . with hetero atoms or with carbon atoms having three bonds to hetero atoms with at the most one bond to halogen, e.g. ester or nitrile radicals, directly attached to ring carbon atoms
- C07D 309/30 . . . Oxygen atoms, e.g. delta-lactones
- C07D 309/32 . having two double bonds between ring members or between ring members and non-ring members
- C07D 309/34 . having three or more double bonds between ring members or between ring members and non-ring members
- C07D 309/36 . . with oxygen atoms directly attached to ring carbon atoms
- C07D 309/38 . . . One oxygen atom in position 2 or 4, e.g. pyrones

C07D 309/40	...	Oxygen atoms attached in position 3 and 4, e.g. maltol
C07D 311/00		Heterocyclic compounds containing six-membered rings having one oxygen atom as the only hetero atom, condensed with other rings
C07D 311/02	.	ortho- or peri-condensed with carbocyclic rings or ring systems
C07D 311/04	..	Benzo[b]pyrans, not hydrogenated in the carbocyclic ring
C07D 311/06	...	with oxygen or sulfur atoms directly attached in position 2
C07D 311/08	....	not hydrogenated in the hetero ring
C07D 311/10	.....	unsubstituted
C07D 311/12	.....	substituted in position 3 and unsubstituted in position 7
C07D 311/14	.....	substituted in position 6 and unsubstituted in position 7
C07D 311/16	.....	substituted in position 7
C07D 311/18	.....	substituted otherwise than in position 3 or 7 (substituted in position 4 by oxygen or sulfur C07D 311/42)
C07D 311/20	....	hydrogenated in the hetero ring
C07D 311/22	...	with oxygen or sulfur atoms directly attached in position 4
C07D 311/24	....	with carbon atoms having three bonds to hetero atoms with at the most one bond to halogen, e.g. ester or nitrile radicals, directly attached in position 2
C07D 311/26	....	with aromatic rings attached in position 2 or 3
C07D 311/28	.....	with aromatic rings attached in position 2 only
C07D 311/30	.....	not hydrogenated in the hetero ring, e.g. flavones
C07D 311/32	.....	2,3-Dihydro derivatives, e.g. flavanones
C07D 311/34	....	with aromatic rings attached in position 3 only
C07D 311/36	.....	not hydrogenated in the hetero ring, e.g. isoflavones
C07D 311/38	.....	2,3-Dihydro derivated, e.g. isoflavanones
C07D 311/40	.....	Separation, e.g. from natural material Purification
C07D 311/42	...	with oxygen or sulfur atoms in position 2 and 4
C07D 311/44	....	with one hydrogen atom in position 3
C07D 311/46	.....	unsubstituted in the carbocyclic ring
C07D 311/48	.....	with two such benzopyran radicals linked together by a carbon chain
C07D 311/50	.....	with elements other than carbon and hydrogen in position 3
C07D 311/52	.....	Enol-esters or -ethers, or sulfur analogues thereof
C07D 311/54	.....	substituted in the carbocyclic ring
C07D 311/56	....	without hydrogen atoms in position 3
C07D 311/58	...	other than with oxygen or sulfur atoms in positions 2 or 4
C07D 311/60	....	with aryl radicals attached in position 2
C07D 311/62	.....	with oxygen atoms directly attached in position 3 e.g. anthocyanidins
C07D 311/64	....	with oxygen atoms directly attached in position 8
C07D 311/66	....	with carbon atoms having three bonds to hetero atoms with at the most one bond to halogen, e.g. ester or nitrile radicals, directly attached in position 2
C07D 311/68	....	with nitrogen atoms directly attached in position 4

- C07D 311/70 with two hydrocarbon radicals attached in position 2 and elements other than carbon and hydrogen in position 6
- C07D 311/72 3,4-Dihydro-derivatives having in position 2 at least one methyl radical and in position 6 an oxygen atom, e.g. tocopherols
- C07D 311/74 . . Benzo[b]pyrans, hydrogenated in the carbocyclic ring
- C07D 311/76 . . Benzo[c]pyrans
- C07D 311/78 . . Ring systems having three or more relevant rings
- C07D 311/80 . . . Dibenzopyrans
Hydrogenated dibenzopyrans
- C07D 311/82 Xanthenes
- C07D 311/84 with hetero atoms or with carbon atoms having three bonds to hetero atoms with at the most one bond to halogen, e.g. ester or nitrile radicals, directly attached in position 9
- C07D 311/86 Oxygen atoms, e.g. xanthenes
- C07D 311/88 Nitrogen atoms
- C07D 311/90 with hydrocarbon radicals substituted by amino radicals, directly attached in position 9
- C07D 311/92 . . . Naphthopyrans
Hydrogenated naphthopyrans
- C07D 311/94 . . condensed with rings other than six-membered
- C07D 311/96 . . spiro-condensed with carbocyclic rings or ring systems

- C07D 313/00 Heterocyclic compounds containing rings of more than six members having one oxygen atom as the only ring hetero atom**

- C07D 313/02 . . Seven-membered rings
- C07D 313/04 . . not condensed with other rings
- C07D 313/06 . . condensed with carbocyclic rings or ring systems
- C07D 313/08 . . . condensed with one six-membered ring
- C07D 313/10 . . . condensed with two six-membered rings
- C07D 313/12 [b,e]-condensed
- C07D 313/14 [b,f]-condensed

- C07D 313/16 . . Eight-membered rings
- C07D 313/18 . . not condensed with other rings
- C07D 313/20 . . condensed with carbocyclic rings or ring systems

- C07D 315/00 Heterocyclic compounds containing rings having one oxygen atom as the only ring hetero atom according to more than one of groups [C07D 303/00](#) to [C07D 313/00](#)**

- C07D 317/00 Heterocyclic compounds containing five-membered rings having two oxygen atoms as the only ring hetero atoms**

- C07D 317/02 . . having the hetero atoms in positions 1 and 2
- C07D 317/04 . . not condensed with other rings

C07D 317/06	..	condensed with carbocyclic rings or ring systems
C07D 317/08	.	having the hetero atoms in positions 1 and 3
C07D 317/10	..	not condensed with other rings
C07D 317/12	...	with only hydrogen atoms or radicals containing only hydrogen and carbon atoms, directly attached to ring carbon atoms
C07D 317/14	...	with substituted hydrocarbon radicals attached to ring carbon atoms
C07D 317/16	....	Radicals substituted by halogen atoms or nitro radicals
C07D 317/18	....	Radicals substituted by singly bound oxygen or sulfur atoms
C07D 317/20	.....	Free hydroxyl or mercaptan
C07D 317/22	.....	etherified
C07D 317/24	.....	esterified
C07D 317/26	....	Radicals substituted by doubly bound oxygen or sulfur atoms or by two such atoms singly bound to the same carbon atom
C07D 317/28	....	Radicals substituted by nitrogen atoms (by nitro radicals C07D 317/16)
C07D 317/30	....	Radicals substituted by carbon atoms having three bonds to hetero atoms, with at the most one bond to halogen, e.g. ester or nitrile radicals
C07D 317/32	...	with hetero atoms or with carbon atoms having three bonds to hetero atoms with at the most one bond to halogen, e.g. ester or nitrile radicals, directly attached to ring carbon atoms
C07D 317/34	....	Oxygen atoms
C07D 317/36	.....	Alkylene carbonates Substituted alkylene carbonates
C07D 317/38	.....	Ethylene carbonate
C07D 317/40	.....	Vinylene carbonate Substituted vinylene carbonates
C07D 317/42	....	Halogen atoms or nitro radicals
C07D 317/44	..	ortho- or peri-condensed with carbocyclic rings or ring systems
C07D 317/46	...	condensed with one six-membered ring
C07D 317/48	....	Methylenedioxybenzenes or hydrogenated methylenedioxybenzenes unsubstituted on the hetero ring
C07D 317/50	.....	with only hydrogen atoms, hydrocarbon or substituted hydrocarbon radicals, directly attached to atoms of the carbocyclic ring
C07D 317/52	.....	Radicals substituted by halogen atoms or nitro radicals
C07D 317/54	.....	Radicals substituted by oxygen atoms
C07D 317/56	.....	Radicals substituted by sulfur atoms
C07D 317/58	.....	Radicals substituted by nitrogen atoms (by nitro radicals C07D 317/52)
C07D 317/60	.....	Radicals substituted by carbon atoms having three bonds to hetero atoms with at the most one bond to halogen, e.g. ester or nitrile radicals
C07D 317/62	.....	with hetero atoms or with carbon atoms having three bonds to hetero atoms with at the most one bond to halogen, e.g. ester or nitrile radicals, directly attached to atoms of the carbocyclic ring
C07D 317/64	.....	Oxygen atoms
C07D 317/66	.....	Nitrogen atoms not forming part of a nitro radical

C07D 317/68	.....	Carbon atoms having three bonds to hetero atoms with at the most one bond to halogen
C07D 317/70	...	condensed with ring systems containing two or more relevant rings
C07D 317/72	..	spiro-condensed with carbocyclic rings
C07D 319/00		Heterocyclic compounds containing six-membered rings having two oxygen atoms as the only ring hetero atoms
C07D 319/02	.	1,2-Dioxanes Hydrogenated 1,2-dioxanes
C07D 319/04	.	1,3-Dioxanes Hydrogenated 1,3-dioxanes
C07D 319/06	..	not condensed with other rings
C07D 319/08	..	condensed with carbocyclic rings or ring systems
C07D 319/10	.	1,4-Dioxanes Hydrogenated 1,4-dioxanes
C07D 319/12	..	not condensed with other rings
C07D 319/14	..	condensed with carbocyclic rings or ring systems
C07D 319/16	...	condensed with one six-membered ring
C07D 319/18	....	Ethylenedioxybenzenes, not substituted on the hetero ring
C07D 319/20	....	with substituents attached to the hetero ring
C07D 319/22	...	condensed with one naphthalene or hydrogenated naphthalene ring system
C07D 319/24	...	[b,e]-condensed with two six-membered rings
C07D 321/00		Heterocyclic compounds containing rings having two oxygen atoms as the only ring hetero atoms, not provided for by groups C07D 317/00 to C07D 319/00
C07D 321/02	.	Seven-membered rings
C07D 321/04	..	not condensed with other rings
C07D 321/06	...	1,3-Dioxepines Hydrogenated 1,3-dioxepines
C07D 321/08	...	1,4-Dioxepines Hydrogenated 1,4-dioxepines
C07D 321/10	..	condensed with carbocyclic rings or ring systems
C07D 321/12	.	Eight-membered rings
C07D 323/00		Heterocyclic compounds containing more than two oxygen atoms as the only ring hetero atoms
C07D 323/02	.	Five-membered rings
C07D 323/04	.	Six-membered rings
C07D 323/06	..	trioxane

C07D 325/00	Heterocyclic compounds containing rings having oxygen as the only ring hetero atoms according to more than one of the main groups C07D 303/00 to C07D 323/00
C07D 327/00	Heterocyclic compounds containing rings having oxygen and sulfur atoms as the only ring hetero atoms
C07D 327/02	. One oxygen atom and one sulfur atom
C07D 327/04	. . Five-membered rings
C07D 327/06	. . Six-membered rings
C07D 327/08	. . . [b,e]-condensed with two six-membered carbocyclic rings
C07D 327/10	. Two oxygen atoms and one sulfur atom, e.g. cyclic sulfates
C07D 329/00	Heterocyclic compounds containing rings having oxygen and selenium or oxygen and tellurium atoms as the only ring hetero atoms
Guide heading:	Heterocyclic compounds having sulfur, selenium or tellurium as the only ring hetero atoms
C07D 331/00	Heterocyclic compounds containing rings of less than five members, having one sulfur atom as the only ring hetero atom
C07D 331/02	. Three-membered rings
C07D 331/04	. Four-membered rings
C07D 333/00	Heterocyclic compounds containing five-membered rings having one sulfur atom as the only ring hetero atom
C07D 333/02	. not condensed with other rings
C07D 333/04	. . not substituted on the ring sulfur
C07D 333/06	. . . with only hydrogen atoms, hydrocarbon or substituted hydrocarbon radicals, directly attached to the ring carbon atoms
C07D 333/08	. . . . Hydrogen atoms or radicals containing only hydrogen and carbon atoms
C07D 333/10	. . . . Thiophene
C07D 333/12	. . . . Radicals substituted by halogen atoms or nitro or nitroso radicals
C07D 333/14	. . . . Radicals substituted by singly bound hetero atoms other than halogen
C07D 333/16	. . . . . by oxygen atoms
C07D 333/18	. . . . . by sulfur atoms
C07D 333/20	. . . . . by nitrogen atoms (nitro , nitroso radicals C07D 333/12)
C07D 333/22	. . . . Radicals substituted by doubly bound hetero atoms, or by two hetero atoms other than halogen singly bound to the same carbon atom
C07D 333/24	. . . . Radicals substituted by carbon atoms having three bonds to hetero atoms with at the most one bond to halogen, e.g. ester or nitrile radicals

C07D 333/26	...	with hetero atoms or with carbon atoms having three bonds to hetero atoms with at the most one bond to halogen, e.g. ester or nitrile radicals, directly attached to ring carbon atoms
C07D 333/28	....	Halogen atoms
C07D 333/30	....	Hetero atoms other than halogen
C07D 333/32	.....	Oxygen atoms
C07D 333/34	.....	Sulfur atoms
C07D 333/36	.....	Nitrogen atoms (nitro , nitroso radicals C07D 333/42)
C07D 333/38	....	Carbon atoms having three bonds to hetero atoms, with at the most one bond to halogen, e.g. ester or nitrile radicals
C07D 333/40	.....	Thiophene-2-carboxylic acid [2]
C07D 333/42	....	with nitro or nitroso radicals directly attached to ring carbon atoms
C07D 333/44	.....	attached in position 5
C07D 333/46	..	substituted on the ring sulfur atom
C07D 333/48	...	by oxygen atoms
C07D 333/50	.	condensed with carbocyclic rings or ring systems
C07D 333/52	..	Benzo[b]thiophenes Hydrogenated benzo[b]thiophenes
C07D 333/54	...	with only hydrogen atoms, hydrocarbon or substituted hydrocarbon radicals, directly attached to carbon atoms of the hetero ring
C07D 333/56	....	Radicals substituted by oxygen atoms
C07D 333/58	....	Radicals substituted by nitrogen atoms
C07D 333/60	....	Radicals substituted by carbon atoms having three bonds to hetero atoms with at the most one bond to halogen, e.g. ester or nitrile radicals
C07D 333/62	...	with hetero atoms or with carbon atoms having three bonds to hetero atoms with at the most one bond to halogen, e.g. ester or nitrile radicals, directly attached to carbon atoms of the hetero ring
C07D 333/64	....	Oxygen atoms
C07D 333/66	....	Nitrogen atoms not forming part of a nitro radical
C07D 333/68	....	Carbon atoms having three bonds to hetero atoms with at the most one bond to halogen
C07D 333/70	.....	attached in position 2
C07D 333/72	..	Benzo[c]thiophenes Hydrogenated benzo[c]thiophenes
C07D 333/74	..	Naphthothiophenes
C07D 333/76	..	Dibenzothiophenes
C07D 333/78	..	condensed with rings other than six-membered or with ring systems containing such rings
C07D 333/80	...	Seven-membered rings
C07D 335/00		Heterocyclic compounds containing six-membered rings having one sulfur atom as the only ring hetero atom
C07D 335/02	.	not condensed with other rings

- C07D 335/04 . condensed with carbocyclic rings or ring systems
- C07D 335/06 . . Benzothiopyrans
Hydrogenated benzothiopyrans
- C07D 335/08 . . Naphthothiopyrans
Hydrogenated naphthothiopyrans
- C07D 335/10 . . Dibenzothiopyrans
Hydrogenated dibenzothiopyrans
- C07D 335/12 . . . Thioxanthenes
- C07D 335/14 with hetero atoms or with carbon atoms having three bonds to hetero atoms
with at the most one bond to halogen, e.g. ester or nitrile radicals, directly
attached in position 9
- C07D 335/16 Oxygen atoms, e.g. thioxanthenes
- C07D 335/18 Nitrogen atoms
- C07D 335/20 with hydrocarbon radicals, substituted by amino radicals, directly attached in
position 9

- C07D 337/00 Heterocyclic compounds containing rings of more than six members having one
sulfur atom as the only ring hetero atom**

- C07D 337/02 . Seven-membered rings
- C07D 337/04 . . not condensed with other rings
- C07D 337/06 . . condensed with carbocyclic rings or ring systems
- C07D 337/08 . . . condensed with one six-membered ring
- C07D 337/10 . . . condensed with two six-membered rings
- C07D 337/12 [b,e]-condensed
- C07D 337/14 [b,f]-condensed

- C07D 337/16 . Eight-membered rings

- C07D 339/00 Heterocyclic compounds containing rings having two sulfur atoms as the only ring
hetero atoms**

- C07D 339/02 . Five-membered rings
- C07D 339/04 . . having the hetero atoms in position 1,2, e.g. lipoic acid
- C07D 339/06 . . having the hetero atoms in position 1,3, e.g. cyclic dithiocarbonates

- C07D 339/08 . Six-membered rings

- C07D 341/00 Heterocyclic compounds containing rings having three or more sulfur atoms as the
only ring hetero atoms**

- C07D 343/00 Heterocyclic compounds containing rings having sulfur and selenium or sulfur and
tellurium atoms as the only ring hetero atoms**

- C07D 345/00 Heterocyclic compounds containing rings having selenium or tellurium atoms as**

the only ring hetero atoms

C07D 347/00 Heterocyclic compounds containing rings having halogen atoms as ring hetero atoms

Guide heading: Heterocyclic compounds containing two or more hetero rings

C07D 401/00 Heterocyclic compounds containing two or more hetero rings, having nitrogen atoms as the only ring hetero atoms, at least one ring being a six-membered ring with only one nitrogen atom

- C07D 401/02 . containing two hetero rings
- C07D 401/04 . . directly linked by a ring-member-to-ring-member bond
- C07D 401/06 . . linked by a carbon chain containing only aliphatic carbon atoms
- C07D 401/08 . . linked by a carbon chain containing alicyclic rings
- C07D 401/10 . . linked by a carbon chain containing aromatic rings
- C07D 401/12 . . linked by a chain containing hetero atoms as chain links
- C07D 401/14 . containing three or more hetero rings

C07D 403/00 Heterocyclic compounds containing two or more hetero rings, having nitrogen atoms as the only ring hetero atoms, not provided for by group [C07D 401/00](#)

- C07D 403/02 . containing two hetero rings
- C07D 403/04 . . directly linked by a ring-member-to-ring-member bond
- C07D 403/06 . . linked by a carbon chain containing only aliphatic carbon atoms
- C07D 403/08 . . linked by a carbon chain containing alicyclic rings
- C07D 403/10 . . linked by a carbon chain containing aromatic rings
- C07D 403/12 . . linked by a chain containing hetero atoms as chain links
- C07D 403/14 . containing three or more hetero rings

C07D 405/00 Heterocyclic compounds containing both one or more hetero rings having oxygen atoms as the only ring hetero atoms, and one or more rings having nitrogen as the only ring hetero atom

- C07D 405/02 . containing two hetero rings
- C07D 405/04 . . directly linked by a ring-member-to-ring-member bond
- C07D 405/06 . . linked by a carbon chain containing only aliphatic carbon atoms
- C07D 405/08 . . linked by a carbon chain containing alicyclic rings
- C07D 405/10 . . linked by a carbon chain containing aromatic rings
- C07D 405/12 . . linked by a chain containing hetero atoms as chain links

C07D 405/14 . containing three or more hetero rings

C07D 407/00 Heterocyclic compounds containing two or more hetero rings, at least one ring having oxygen atoms as the only ring hetero atoms, not provided for by group [C07D 405/00](#)

C07D 407/02 . containing two hetero rings

C07D 407/04 . . directly linked by a ring-member-to-ring-member bond

C07D 407/06 . . linked by a carbon chain containing only aliphatic carbon atoms

C07D 407/08 . . linked by a carbon chain containing alicyclic rings

C07D 407/10 . . linked by a carbon chain containing aromatic rings

C07D 407/12 . . linked by a chain containing hetero atoms as chain links

C07D 407/14 . containing three or more hetero rings

C07D 409/00 Heterocyclic compounds containing two or more hetero rings, at least one ring having sulfur atoms as the only ring hetero atoms

C07D 409/02 . containing two hetero rings

C07D 409/04 . . directly linked by a ring-member-to-ring-member bond

C07D 409/06 . . linked by a carbon chain containing only aliphatic carbon atoms

C07D 409/08 . . linked by a carbon chain containing alicyclic rings

C07D 409/10 . . linked by a carbon chain containing aromatic rings

C07D 409/12 . . linked by a chain containing hetero atoms as chain links

C07D 409/14 . containing three or more hetero rings

C07D 411/00 Heterocyclic compounds containing two or more hetero rings, at least one ring having oxygen and sulfur atoms as the only ring hetero atoms

C07D 411/02 . containing two hetero rings

C07D 411/04 . . directly linked by a ring-member-to-ring-member bond

C07D 411/06 . . linked by a carbon chain containing only aliphatic carbon atoms

C07D 411/08 . . linked by a carbon chain containing alicyclic rings

C07D 411/10 . . linked by a carbon chain containing aromatic rings

C07D 411/12 . . linked by a chain containing hetero atoms as chain links

C07D 411/14 . containing three or more hetero rings

C07D 413/00 Heterocyclic compounds containing two or more hetero rings, at least one ring having nitrogen and oxygen atoms as the only ring hetero atoms

C07D 413/02 . containing two hetero rings

C07D 413/04 . . directly linked by a ring-member-to-ring-member bond

- C07D 413/06 . . linked by a carbon chain containing only aliphatic carbon atoms
- C07D 413/08 . . linked by a carbon chain containing alicyclic rings
- C07D 413/10 . . linked by a carbon chain containing aromatic rings
- C07D 413/12 . . linked by a chain containing hetero atoms as chain links

- C07D 413/14 . containing three or more hetero rings

C07D 415/00 Heterocyclic compounds containing the thiamine skeleton

C07D 417/00 Heterocyclic compounds containing two or more hetero rings, at least one ring having nitrogen and sulfur atoms as the only ring hetero atoms, not provided for by group [C07D 415/00](#)

- C07D 417/02 . containing two hetero rings
- C07D 417/04 . . directly linked by a ring-member-to-ring-member bond
- C07D 417/06 . . linked by a carbon chain containing only aliphatic carbon atoms
- C07D 417/08 . . linked by a carbon chain containing alicyclic rings
- C07D 417/10 . . linked by a carbon chain containing aromatic rings
- C07D 417/12 . . linked by a chain containing hetero atoms as chain links

- C07D 417/14 . containing three or more hetero rings

C07D 419/00 Heterocyclic compounds containing two or more hetero rings, at least one ring having nitrogen, oxygen, and sulfur atoms as the only ring hetero atoms

- C07D 419/02 . containing two hetero rings
- C07D 419/04 . . directly linked by a ring-member-to-ring-member bond
- C07D 419/06 . . linked by a carbon chain containing only aliphatic carbon atoms
- C07D 419/08 . . linked by a carbon chain containing alicyclic rings
- C07D 419/10 . . linked by a carbon chain containing aromatic rings
- C07D 419/12 . . linked by a chain containing hetero atoms as chain links

- C07D 419/14 . containing three or more hetero rings

C07D 421/00 Heterocyclic compounds containing two or more hetero rings, at least one ring having selenium, tellurium, or halogen atoms as ring hetero atoms

- C07D 421/02 . containing two hetero rings
- C07D 421/04 . . directly linked by a ring-member-to-ring-member bond
- C07D 421/06 . . linked by a carbon chain containing only aliphatic carbon atoms
- C07D 421/08 . . linked by a carbon chain containing alicyclic rings
- C07D 421/10 . . linked by a carbon chain containing aromatic rings
- C07D 421/12 . . linked by a chain containing hetero atoms as chain links

- C07D 421/14 . containing three or more hetero rings

- Guide heading:** Heterocyclic compounds containing condensed hetero ring systems [C07D 451/00](#) - [C07D 517/00](#) cover compounds containing one system of two or more relevant hetero rings condensed among themselves or condensed with a common carbocyclic ring system, with or without other non- condensed hetero rings. For the purpose of classification in groups [C07D 451/00](#) - [C07D 519/00](#), the degree of hydrogenation of the ring system is not taken into consideration. For the purpose of classification in groups [C07D 451/00](#) - [C07D 463/00](#), [C07D 473/00](#) - [C07D 477/00](#), [C07D 489/00](#), [C07D 499/00](#) - [C07D 507/00](#), the wording of the groups has to be understood, in the absence of an indication to the contrary, as including ring systems further condensed with carbocyclic rings or ring systems, but excluding ring systems further condensed with other hetero rings, either directly or through a common carbocyclic ring system, e.g. sparteine is classified in group [C07D 471/22](#), not in group [C07D 455/02](#). In groups [C07D 471/00](#), [C07D 487/00](#), [C07D 491/00](#) - [C07D 498/00](#) or [C07D 513/00](#) - [C07D 517/00](#), the subdivision is based on the number of relevant hetero rings.
- C07D 451/00** Heterocyclic compounds containing 8-azabicyclo [3.2.1] octane, 9-azabicyclo [3.3.1] nonane, or 3-oxa-9-azatricyclo [3.3.1.0<2,4>] nonane ring systems, e.g. tropane or granatane alkaloids, scopolamine
Cyclic acetals thereof
- C07D 451/02** . containing not further condensed 8-azabicyclo [3.2.1] octane or 3-oxa-9-azatricyclo [3.3.1.0<2,4>] nonane ring systems, e.g. tropane
Cyclic acetals thereof
- C07D 451/04** . . with hetero atoms directly attached in position 3 of the 8-azabicyclo [3.2.1] octane or in position 7 of the 3-oxa-9-azatricyclo [3.3.1.0<2,4>] nonane ring system
- C07D 451/06** . . . Oxygen atoms
- C07D 451/08** Diarylmethoxy radicals
- C07D 451/10** acylated by aliphatic or araliphatic carboxylic acids, e.g. atropine, scopolamine
- C07D 451/12** acylated by aromatic or heteroaromatic carboxylic acids, e.g. cocaine
- C07D 451/14** . containing 9-azabicyclo [3.3.1] nonane ring systems, e.g. granatane, 2-aza-adamantane
Cyclic acetals thereof
- C07D 453/00** Heterocyclic compounds containing quinuclidine or iso-quinuclidine ring systems, e.g. quinine alkaloids
- C07D 453/02** . containing not further condensed quinuclidine ring systems
- C07D 453/04** . . having a quinolyl-4, a substituted quinolyl-4 or a alkylenedioxy-quinolyl-4 radical linked through only one carbon atom, attached in position 2, e.g. quinine
- C07D 453/06** . containing isoquinuclidine ring systems
- C07D 455/00** Heterocyclic compounds containing quinolizine ring systems, e.g. emetine alkaloids, protoberberine
Alkylenedioxy derivatives of dibenzo [a, g] quinolizines, e.g. berberine
- C07D 455/02** . containing not further condensed quinolizine ring systems

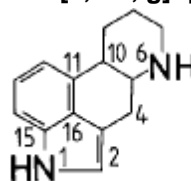
- C07D 455/03**
- containing quinolizine ring systems directly condensed with at least one six-membered carbocyclic ring, e.g. protoberberine
 - Alkylenedioxy derivatives of dibenzo [a, g] quinolizines, e.g. berberine

WARNING

Group [C07D 455/03](#) is temporarily incomplete. See provisionally also other CPC subgroups of [C07D 455/00](#)

- C07D 455/04**
- containing a quinolizine ring system condensed with only one six-membered carbocyclic ring, e.g. julolidine
- C07D 455/06**
- containing benzo [a] quinolizine ring systems
- C07D 455/08**
- having an isoquinolyl-1, a substituted isoquinolyl-1 or an alkylenedioxyisoquinolyl-1 radical linked through only one carbon atom, attached in position 2, e.g. emetine

- C07D 457/00**
- Heterocyclic compounds containing indolo [4, 3-f, g] quinoline ring systems, e.g. derivatives of ergoline, of the formula:**



, e.g. lysergic acid (

compounds of the cyclic peptide type derived from ergotamine [C07D 519/02](#))

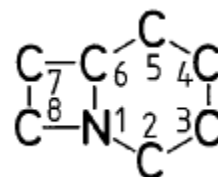
- C07D 457/02**
- with hydrocarbon or substituted hydrocarbon radicals, attached in position 8
- C07D 457/04**
- with carbon atoms having three bonds to hetero atoms with at the most one bond to halogen, e.g. ester or nitrile radicals, directly attached in position 8
- C07D 457/06**
- Lysergic acid amides
- C07D 457/08**
- in which the amide nitrogen is a member of a heterocyclic ring
- C07D 457/10**
- with hetero atoms directly attached in position 8
- C07D 457/12**
- Nitrogen atoms
- C07D 457/14**
- containing indolo [4, 3-f, g] quinoline ring systems condensed with carbocyclic rings or ring systems

- C07D 459/00**
- Heterocyclic compounds containing benz [g] indolo [2, 3-a] quinolizine ring systems, e.g. yohimbine**
- 16, 18-lactones thereof, e.g. reserpine lactone**

- C07D 461/00**
- Heterocyclic compounds containing indolo [3,2,1-d,e] pyrido [3,2,1,j] [1,5]-naphthyridine ring systems, e.g. vincamine (dimeric indolo alkaloids [C07D 519/04](#))**

C07D 463/00

Heterocyclic compounds containing 1-azabicyclo [4.2.0] octane ring systems, i.e. compounds containing a ring system of the formula:



, e.g.

carbacephalosporins

Such ring systems being further condensed, e.g. 2,3-condensed with an oxygen-, nitrogen- or sulfur-containing hetero ring

WARNING

The IPC subgroups of [C07D 463/00](#), introduced in the CPC scheme in October 2007, might be temporarily incomplete as a number of documents presently classified in CPC subgroups of [C07D 463/00](#) still needs reclassification to these IPC subgroups

- [C07D 463/02](#) . Preparation (by microbiological processes [C12P 17/18](#))
- [C07D 463/04](#) . . by forming the ring or condensed ring systems
- [C07D 463/06](#) . . from compounds already containing the ring or condensed ring systems, e.g. by dehydrogenation of the ring, by introduction, elimination or modification of substituents
- [C07D 463/08](#) . . . Modification of a carboxyl group directly attached in position 2, e.g. esterification
- [C07D 463/10](#) . with a carbon atom having three bonds to hetero atoms with at the most one bond to halogen, e.g. an ester or nitrile radical, directly attached in position 2
- [C07D 463/12](#) . . with hydrogen atoms, hydrocarbon or substituted hydrocarbon radicals attached in position 7
- [C07D 463/14](#) . . with hetero atoms directly attached in position 7
- [C07D 463/16](#) . . . Nitrogen atoms
- [C07D 463/18](#) further acylated by radicals derived from carboxylic acids or by nitrogen or sulfur analogues thereof
- [C07D 463/20](#) with the acylating radicals further substituted by hetero atoms or by carbon atoms having three bonds to hetero atoms with at the most one bond to halogen
- [C07D 463/22](#) further substituted by nitrogen atoms

C07D 471/00

Heterocyclic compounds containing nitrogen atoms as the only ring hetero atoms in the condensed system, at least one ring being a six-membered ring with one nitrogen atom, not provided for by groups [C07D 451/00](#) to [C07D 463/00](#)

- [C07D 471/02](#) . in which the condensed system contains two hetero rings
- [C07D 471/04](#) . . Ortho-condensed systems (carbacephalosporins [C07D 463/00](#))
- [C07D 471/06](#) . . Peri-condensed systems
- [C07D 471/08](#) . . Bridged systems
- [C07D 471/10](#) . . Spiro-condensed systems

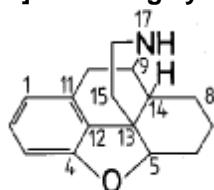
- C07D 471/12 . in which the condensed system contains three hetero rings
- C07D 471/14 . . Ortho-condensed systems
- C07D 471/16 . . Peri-condensed systems
- C07D 471/18 . . Bridged systems
- C07D 471/20 . . Spiro-condensed systems
- C07D 471/22 . in which the condensed system contains four or more hetero rings
- C07D 473/00 Heterocyclic compounds containing purine ring systems**
- C07D 473/02 . with oxygen, sulfur or nitrogen atoms directly attached in positions 2 and 6
- C07D 473/04 . . two oxygen atoms
- C07D 473/06 . . . with radicals containing only hydrogen and carbon atoms, attached in position 1 or 3
- C07D 473/08 with methyl radicals in positions 1 and 3, e.g. theophylline
- C07D 473/10 with methyl radicals in positions 3 and 7, e.g. theobromine
- C07D 473/12 with methyl radicals in positions 1, 3 and 7, e.g. caffeine
- C07D 473/14 with two methyl radicals in positions 1 and 3 and two methyl radicals in positions 7, 8 or 9
- C07D 473/16 . . two nitrogen atoms
- C07D 473/18 . . one oxygen and one nitrogen atom, e.g. guanine
- C07D 473/20 . . two sulfur atoms
- C07D 473/22 . . one oxygen and one sulfur atom
- C07D 473/24 . . one nitrogen and one sulfur atom
- C07D 473/26 . with an oxygen, sulfur or nitrogen atom directly attached in position 2 or 6, but not in both
- C07D 473/28 . . Oxygen atom
- C07D 473/30 . . . attached in position 6, e.g. hypoxanthine
- C07D 473/32 . . Nitrogen atom
- C07D 473/34 . . . attached in position 6, e.g. adenine
- C07D 473/36 . . Sulfur atom
- C07D 473/38 . . . attached in position 6
- C07D 473/40 . with halogen atoms or perhalogeno-alkyl radicals directly attached in positions 2 or 6
- C07D 475/00 Heterocyclic compounds containing pteridine ring systems**
- C07D 475/02 . with an oxygen atom directly attached in position 4
- C07D 475/04 . . with a nitrogen atom directly attached in position 2
- C07D 475/06 . with a nitrogen atom directly attached in position 4
- C07D 475/08 . . with a nitrogen atom directly attached in position 2
- C07D 475/10 . . with an aromatic or hetero-aromatic ring directly attached in position 2

- C07D 475/12 . containing pteridine ring systems condensed with carbocyclic rings or ring systems
- C07D 475/14 . . Benz [g] pteridines, e.g. riboflavin
- C07D 477/00** **Heterocyclic compounds containing 1-azabicyclo [3.2.0] heptane ring systems, i.e. compounds containing a ring system of the formula:**
-
- carbapenicillins, thienamycins**
Such ring systems being further condensed, e.g. 2,3-condensed with an oxygen-, nitrogen- or sulfur-containing hetero ring
- C07D 477/02 . Preparation (by microbiological processes [C12P 17/18](#))
- C07D 477/04 . . by forming the ring or condensed ring systems
- C07D 477/06 . . from compounds already containing the ring or condensed ring systems, e.g. by dehydrogenation of the ring, by introduction, elimination or modification of substituents
- C07D 477/08 . . . Modification of a carboxyl group directly attached in position 2, e.g. esterification
- C07D 477/10 . with hydrogen atoms, hydrocarbon or substituted hydrocarbon radicals, directly attached in position 4 and with a carbon atom having three bonds to hetero atoms with at the most one bond to halogen, e.g. an ester or nitrile radical, directly attached in position 2
- C07D 477/12 . . with hydrogen atoms, hydrocarbon or substituted hydrocarbon radicals, attached in position 6
- C07D 477/14 . . . with hydrogen atoms, hydrocarbon or substituted hydrocarbon radicals, attached in position 3
- C07D 477/16 . . . with hetero atoms or carbon atoms having three bonds to hetero atoms with at the most one bond to halogen, e.g. an ester or nitrile radical, directly attached in position 3
- C07D 477/18 Oxygen atoms
- C07D 477/20 Sulfur atoms
- C07D 477/22 Nitrogen atoms
- C07D 477/24 . . with hetero atoms or carbon atoms having three bonds to hetero atoms with at the most one bond to halogen, e.g. an ester or nitrile radical, directly attached in position 6
- C07D 477/26 . with hetero atoms or carbon atoms having three bonds to hetero atoms with at the most one bond to halogen, e.g. an ester or nitrile radical, directly attached in position 4
- C07D 487/00** **Heterocyclic compounds containing nitrogen atoms as the only ring hetero atoms in the condensed system, not provided for by [C07D 451/00](#) to [C07D 477/00](#)**
- C07D 487/02 . in which the condensed system contains two hetero rings
- C07D 487/04 . . Ortho-condensed systems (carbapenams, e.g. thienamycins, [C07D 477/00](#))
- C07D 487/06 . . Peri-condensed systems

- C07D 487/08 . . Bridged systems
- C07D 487/10 . . Spiro-condensed systems
- C07D 487/12 . in which the condensed system contains three hetero rings
- C07D 487/14 . . Ortho-condensed systems
- C07D 487/16 . . Peri-condensed systems
- C07D 487/18 . . Bridged systems
- C07D 487/20 . . Spiro-condensed systems
- C07D 487/22 . in which the condensed system contains four or more hetero rings

C07D 489/00

Heterocyclic compounds containing 4aH-8, 9 c- lminoethano-phenanthro [4, 5-b, c, d] furan ring systems, e.g. derivatives of [4, 5-epoxy]-morphinan of the formula:



- C07D 489/02 . with oxygen atoms attached in positions 3 and 6, e.g. morphine, morphinone
- C07D 489/04 . . Salts
- Organic complexes
- C07D 489/06 . with a hetero atom directly attached in position 14
- C07D 489/08 . . Oxygen atom
- C07D 489/09 . containing 4aH-8, 9 c-lminoethano- phenanthro [4, 5-b, c, d] furan ring systems condensed with carbocyclic rings or ring systems
- C07D 489/10 . . with a bridge between positions 6 and 14
- C07D 489/12 . . . the bridge containing only two carbon atoms

C07D 491/00

Heterocyclic compounds containing in the condensed ring system both one or more rings having oxygen atoms as the only ring hetero atoms and one or more rings having nitrogen atoms as the only ring hetero atoms, not provided for by groups [C07D 451/00](#) to [C07D 459/00](#) , [C07D 463/00](#) , [C07D 477/00](#) or [C07D 489/00](#)

- C07D 491/02 . in which the condensed system contains two hetero rings
- C07D 491/04 . . Ortho-condensed systems
- C07D 491/044 . . . with only one oxygen atom as ring hetero atom in the oxygen-containing ring
- C07D 491/048 the oxygen-containing ring being five-membered
- C07D 491/052 the oxygen-containing ring being six-membered
- C07D 491/056 . . . with two or more oxygen atoms as ring hetero atoms in the oxygen-containing ring
- C07D 491/06 . . Peri-condensed systems
- C07D 491/08 . . Bridged systems
- C07D 491/10 . . Spiro-condensed systems

- C07D 491/107 . . . with only one oxygen atom as ring hetero atom in the oxygen-containing ring
- C07D 491/113 . . . with two or more oxygen atoms as ring hetero atoms in the oxygen-containing ring
- C07D 491/12 . in which the condensed system contains three hetero rings
- C07D 491/14 . . Ortho-condensed systems ([alkylenedioxy derivatives of dibenzo \[a, g\] quinolizines, e.g. berberine, C07D 455/03](#))
- C07D 491/147 . . . the condensed system containing one ring with oxygen as ring hetero atom and two rings with nitrogen as ring hetero atom
- C07D 491/153 . . . the condensed system containing two rings with oxygen as ring hetero atom and one ring with nitrogen as ring hetero atom
- C07D 491/16 . . Peri-condensed systems
- C07D 491/18 . . Bridged systems ([3-oxa-9-azatricyclo \[3.3.1.0<2,4>\] nonane ring systems, e.g. scopolamine, C07D 451/00](#))
- C07D 491/20 . . Spiro-condensed systems
- C07D 491/22 . in which the condensed system contains four or more hetero rings
- C07D 493/00 Heterocyclic compounds containing oxygen atoms as the only ring hetero atoms in the condensed system**
- C07D 493/02 . in which the condensed system contains two hetero rings
- C07D 493/04 . . Ortho-condensed systems
- C07D 493/06 . . Peri-condensed systems
- C07D 493/08 . . Bridged systems
- C07D 493/10 . . Spiro-condensed systems
- C07D 493/12 . in which the condensed system contains three hetero rings
- C07D 493/14 . . Ortho-condensed systems
- C07D 493/16 . . Peri-condensed systems
- C07D 493/18 . . Bridged systems
- C07D 493/20 . . Spiro-condensed systems
- C07D 493/22 . in which the condensed system contains four or more hetero rings
- C07D 495/00 Heterocyclic compounds containing in the condensed system at least one hetero ring having sulfur atoms as the only ring hetero atoms**
- C07D 495/02 . in which the condensed system contains two hetero rings
- C07D 495/04 . . Ortho-condensed systems
- C07D 495/06 . . Peri-condensed systems
- C07D 495/08 . . Bridged systems
- C07D 495/10 . . Spiro-condensed systems
- C07D 495/12 . in which the condensed system contains three hetero rings
- C07D 495/14 . . Ortho-condensed systems

- C07D 495/16 . . . Peri-condensed systems
- C07D 495/18 . . . Bridged systems
- C07D 495/20 . . . Spiro-condensed systems
- C07D 495/22 . . . in which the condensed system contains four or more hetero rings

C07D 497/00 Heterocyclic compounds containing in the condensed system at least one hetero ring having oxygen and sulfur atoms as the only ring hetero atoms

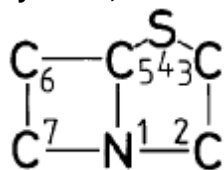
- C07D 497/02 . . . in which the condensed system contains two hetero rings
- C07D 497/04 . . . Ortho-condensed systems
- C07D 497/06 . . . Peri-condensed systems
- C07D 497/08 . . . Bridged systems
- C07D 497/10 . . . Spiro-condensed systems
- C07D 497/12 . . . in which the condensed system contains three hetero rings
- C07D 497/14 . . . Ortho-condensed systems
- C07D 497/16 . . . Peri-condensed systems
- C07D 497/18 . . . Bridged systems
- C07D 497/20 . . . Spiro-condensed systems
- C07D 497/22 . . . in which the condensed system contains four or more hetero rings

C07D 498/00 Heterocyclic compounds containing in the condensed system at least one hetero ring having nitrogen and oxygen atoms as the only ring hetero atoms (4-oxa-1-azabicyclo [3.2.0] heptanes, e.g. oxapenicillins [C07D 503/00](#) ; 5-oxa-1-azabicyclo [4.2.0] octanes, e.g. oxacephalosporins [C07D 505/00](#) ; analogues thereof having ring oxygen atoms in other position [C07D 507/00](#))

- C07D 498/02 . . . in which the condensed system contains two hetero rings
- C07D 498/04 . . . Ortho-condensed systems
- C07D 498/06 . . . Peri-condensed systems
- C07D 498/08 . . . Bridged systems
- C07D 498/10 . . . Spiro-condensed systems
- C07D 498/12 . . . in which the condensed system contains three hetero rings
- C07D 498/14 . . . Ortho-condensed systems
- C07D 498/16 . . . Peri-condensed systems
- C07D 498/18 . . . Bridged systems
- C07D 498/20 . . . Spiro-condensed systems
- C07D 498/22 . . . in which the condensed system contains four or more hetero rings

C07D 499/00

Heterocyclic compounds containing 4-thia-1-azabicyclo [3.2.0] heptane ring systems, i.e. compounds containing a ring system of the formula:



, e.g. penicillins, penems

Such ring systems being further condensed, e.g. 2,3-condensed with an oxygen-, nitrogen- or sulfur-containing hetero ring

C07D 499/04

. Preparation

C07D 499/06

.. by forming the ring or condensed ring systems ([by microbiological processes C12P 37/00](#))

C07D 499/08

.. Modification of a carboxyl radical directly attached in position 2, e.g. esterification

C07D 499/10

.. Modification of an amino radical directly attached in position 6

C07D 499/12

... Acylation

C07D 499/14

.. Preparation of salts

C07D 499/16

... of alkali or alkaline earth metals

C07D 499/18

.. Separation
Purification

C07D 499/20

... via salts with organic bases

C07D 499/21

. with a nitrogen atom directly attached in position 6 and a carbon atom having three bonds to hetero atoms with at the most one bond to halogen, e.g. an ester or nitrile radical, directly attached in position 2

C07D 499/22

.. Salts with organic bases
Complexes with organic compounds

C07D 499/24

... with acyclic or carbocyclic compounds containing amino radicals

C07D 499/26

... with heterocyclic compounds

C07D 499/28

.. with modified 2-carboxyl group

C07D 499/30

... Acid anhydride

C07D 499/32

... Esters

C07D 499/34

... Thio-acid
Esters thereof

C07D 499/36

.... O-esters

C07D 499/38

.... S-esters

C07D 499/40

... Amides
Hydrazides
Azides

C07D 499/42

.. Compounds with a free primary amino radical attached in position 6

C07D 499/44

.. Compounds with an amino radical acylated by carboxylic acids, attached in position 6

C07D 499/46

... with acyclic hydrocarbon radicals or such radicals substituted by carbocyclic or heterocyclic rings, attached to the carboxamido radical

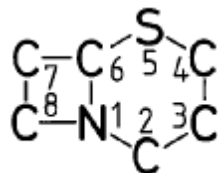
C07D 499/48

... with a carbon chain, substituted by hetero atoms or by carbon atoms having three bonds to hetero atoms with at the most one bond to halogen, e.g. ester or

- nitrile radicals, attached to the carboxamido radical
- C07D 499/50 substituted in beta-position to the carboxamido radical
 - C07D 499/52 by oxygen or sulfur atoms
 - C07D 499/54 by nitrogen atoms
 - C07D 499/56 by carbon atoms having three bonds to hetero atoms with at the most one bond to halogen
 - C07D 499/58 substituted in alpha-position to the carboxamido radical
 - C07D 499/60 by oxygen atoms
 - C07D 499/62 by sulfur atoms
 - C07D 499/64 by nitrogen atoms
 - C07D 499/66 with alicyclic rings as additional substituents on the carbon chain
 - C07D 499/68 with aromatic rings as additional substituents on the carbon chain
 - C07D 499/70 with hetero rings as additional substituents on the carbon chain
 - C07D 499/72 by carbon atoms having three bonds to hetero atoms
 - C07D 499/74 with carbocyclic rings directly attached to the carboxamido radical
 - C07D 499/76 with hetero rings directly attached to the carboxamido radical
 - C07D 499/78 Compounds with an amino radical, acylated by carbonic acid, or by nitrogen or sulfur analogues thereof, attached in position 6
 - C07D 499/80 Compounds with a nitrogen-containing hetero ring, attached with the ring nitrogen atom in position 6
 - C07D 499/86 with only atoms other than nitrogen atoms directly attached in position 6 and a carbon atom having three bonds to hetero atoms with at the most one bond to halogen, e.g. an ester or nitrile radical, directly attached in position 2
 - C07D 499/861 with a hydrocarbon radical or a substituted hydrocarbon radical, directly attached in position 6
 - C07D 499/865 with hetero atoms or with carbon atoms having three bonds to hetero atoms with at the most one bond to halogen, e.g. an ester or nitrile radical, directly attached in position 6
 - C07D 499/87 Compounds being unsubstituted in position 3 or with substituents other than only two methyl radicals attached in position 3, and with a carbon atom having three bonds to hetero atoms with at the most one bond to halogen, e.g. an ester or nitrile radical, directly attached in position 2
 - C07D 499/88 Compounds with a double bond between positions 2 and 3 and a carbon atom having three bonds to hetero atoms with at the most one bond to halogen, e.g. an ester or nitrile radical, directly attached in position 2
 - C07D 499/881 with a hydrogen atom or an unsubstituted hydrocarbon radical, attached in position 3
 - C07D 499/883 with a substituted hydrocarbon radical attached in position 3
 - C07D 499/887 with a hetero atom or a carbon atom having three bonds to hetero atoms with at the most one bond to halogen, e.g. an ester or nitrile radical, directly attached in position 3
 - C07D 499/893 with a hetero ring or a condensed hetero ring system, directly attached in position 3
 - C07D 499/897 Compounds with substituents other than a carbon atom having three bonds to hetero atoms with at the most one bond to halogen, directly attached in position 2

C07D 499/90 . further condensed with carbocyclic rings or ring systems [5]

C07D 501/00 Heterocyclic compounds containing 5-thia-1-azabicyclo [4.2.0] octane ring systems, i.e. compounds containing a ring system of the formula:
, e.g. cephalosporins

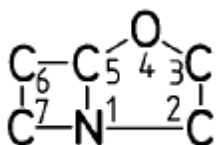


Such ring systems being further condensed, e.g. 2,3-condensed with an oxygen-, nitrogen- or sulfur-containing hetero ring

- C07D 501/02 . Preparation
- C07D 501/04 . . from compounds already containing the ring or condensed ring systems, e.g. by dehydrogenation of the ring, by introduction, elimination or modification of substituents
- C07D 501/06 . . . Acylation of 7-aminocephalosporanic acid
- C07D 501/08 . . by forming the ring or condensed ring systems ([by microbiological processes C12P 35/00](#))
- C07D 501/10 . . . from compounds containing the penicillin ring system
- C07D 501/12 . . Separation
Purification
- C07D 501/14 . Compounds having a nitrogen atom directly attached in position 7
- C07D 501/16 . . with a double bond between positions 2 and 3
- C07D 501/18 . . . 7-Aminocephalosporanic or substituted 7-aminocephalosporanic acids
- C07D 501/20 . . . 7-Acylaminocephalosporanic or substituted 7-acylaminocephalosporanic acids in which the acyl radicals are derived from carboxylic acids
- C07D 501/22 with radicals containing only hydrogen and carbon atoms, attached in position 3
- C07D 501/24 with hydrocarbon radicals, substituted by hetero atoms or hetero rings, attached in position 3
- C07D 501/26 Methylene radicals, substituted by oxygen atoms
Lactones thereof with the 2-carboxyl group
- C07D 501/28 with the 7-amino radical acylated by an aliphatic carboxylic acid, which is substituted by hetero atoms
- C07D 501/30 with the 7-amino-radical acylated by an araliphatic carboxylic acid
- C07D 501/32 with the 7-amino radical acylated by an araliphatic carboxylic acid, which is substituted on the aliphatic radical by hetero atoms
- C07D 501/34 with the 7-amino radical acylated by carboxylic acids containing hetero rings
- C07D 501/36 Methylene radicals, substituted by sulfur atoms
- C07D 501/38 Methylene radicals, substituted by nitrogen atoms
Lactams thereof with the 2-carboxyl group
Methylene radicals substituted by nitrogen-containing hetero rings attached by the ring nitrogen atom
Quaternary compounds thereof

- C07D 501/40 with the 7-amino radical acylated by an aliphatic carboxylic acid, which is substituted by hetero atoms
- C07D 501/42 with the 7-amino radical acylated by an araliphatic carboxylic acid
- C07D 501/44 with the 7-amino radical acylated by an araliphatic carboxylic acid, which is substituted on the aliphatic radical by hetero atoms
- C07D 501/46 with the 7-amino radical acylated by carboxylic acids containing hetero rings
- C07D 501/48 Methylene radicals, substituted by hetero rings ([C07D 501/38](#) to [C07D 501/46](#) take precedence)
- C07D 501/50 with the 7-amino radical acylated by an aliphatic carboxylic acid, which is substituted by hetero atoms
- C07D 501/52 with the 7-amino radical acylated by an araliphatic carboxylic acid
- C07D 501/54 with the 7-amino radical acylated by an araliphatic carboxylic acid, which is substituted on the aliphatic radical by hetero atoms
- C07D 501/56 with the 7-amino radical acylated by carboxylic acids containing hetero rings
- C07D 501/57 with a further substituent in position 7, e.g. cephamycines
- C07D 501/58 ... with a nitrogen atom, which is a member of a hetero ring, attached in position 7
- C07D 501/59 ... with hetero atoms directly attached in position 3
- C07D 501/60 .. with a double bond between positions 3 and 4
- C07D 501/62 . Compounds further condensed with a carbocyclic ring or ring system

C07D 503/00 Heterocyclic compounds containing 4-oxa-1-azabicyclo [3.2.0] heptane ring systems, i.e. compounds containing a ring system of the formula:
, e.g. oxapenicillins, clavulanic acid derivatives



Such ring systems being further condensed, e.g. 2,3-condensed with an oxygen-, nitrogen- or sulfur-containing hetero ring

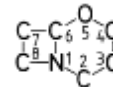
- C07D 503/02 . Preparation ([by microbiological processes C12P 17/18](#))
- C07D 503/04 .. by forming the ring or condensed ring systems
- C07D 503/06 .. from compounds already containing the ring or condensed ring systems, e.g. by dehydrogenation of the ring, by introduction, elimination or modification of substituents
- C07D 503/08 ... Modification of a carboxyl group directly attached in position 2, e.g. esterification
- C07D 503/10 . with a carbon atom having three bonds to hetero atoms with at the most one bond to halogen, e.g. an ester or nitrile radical, directly attached in position 2
- C07D 503/12 .. unsubstituted in position 6
- C07D 503/14 ... with hydrogen atoms, hydrocarbon or substituted hydrocarbon radicals, other than a carbon atom having three bonds to hetero atoms with at the most one bond to halogen, attached in position 3
- C07D 503/16 Radicals substituted by hetero atoms or by carbon atoms having three bonds to hetero atoms with at the most one bond to halogen, e.g. an ester or

nitrile radical

- C07D 503/18 by oxygen atoms
 C07D 503/20 by sulfur atoms
 C07D 503/22 by nitrogen atoms

C07D 505/00

Heterocyclic compounds containing 5-oxa-1-azabicyclo [4.2.0] octane ring systems, i.e. compounds containing a ring system of the formula:



, e.g.

oxacephalosporins

Such ring systems being further condensed, e.g. 2,3-condensed with an oxygen-, nitrogen- or sulfur-containing hetero ring

- C07D 505/02 . Preparation (by microbiological processes [C12P 17/18](#))
 C07D 505/04 . . by forming the ring or condensed ring systems
 C07D 505/06 . . from compounds already containing the ring or condensed ring systems, e.g. by dehydrogenation of the ring, by introduction, elimination or modification of substituents
 C07D 505/08 . . . Modification of a carboxyl group directly attached in position 2, e.g. esterification
 C07D 505/10 . with a carbon atom having three bonds to hetero atoms with at the most one bond to halogen, e.g. an ester or nitrile radical, directly attached in position 2
 C07D 505/12 . . substituted in position 7
 C07D 505/14 . . . with hetero atoms directly attached in position 7
 C07D 505/16 Nitrogen atoms
 C07D 505/18 further acylated by radicals derived from carboxylic acids or by nitrogen or sulfur analogues thereof
 C07D 505/20 with the acylating radicals further substituted by hetero atoms or by carbon atoms having three bonds to hetero atoms with at the most one bond to halogen
 C07D 505/22 further substituted by singly-bound nitrogen atoms
 C07D 505/24 further substituted by doubly-bound nitrogen atoms

C07D 507/00

Heterocyclic compounds containing a condensed beta-lactam ring system, not provided for by groups [C07D 463/00](#) , [C07D 477/00](#) or [C07D 499/00](#) to [C07D 505/00](#) Such ring systems being further condensed

- C07D 507/02 . containing 3-oxa-1-azabicyclo [3.2.0] heptane ring systems
 C07D 507/04 . containing 2-oxa-1-azabicyclo [4.2.0] octane ring systems
 C07D 507/06 . containing 3-oxa-1-azabicyclo [4.2.0] octane ring systems
 C07D 507/08 . containing 4-oxa-1-azabicyclo [4.2.0] octane ring systems

C07D 513/00

Heterocyclic compounds containing in the condensed system at least one hetero ring having nitrogen and sulfur atoms as the only ring hetero atoms, not provided for in groups [C07D 463/00](#) , [C07D 477/00](#) or [C07D 499/00](#) to [C07D 507/00](#)

- C07D 513/02 . in which the condensed system contains two hetero rings
- C07D 513/04 . . Ortho-condensed systems
- C07D 513/06 . . Peri-condensed systems
- C07D 513/08 . . Bridged systems
- C07D 513/10 . . Spiro-condensed systems
- C07D 513/12 . in which the condensed system contains three hetero rings
- C07D 513/14 . . Ortho-condensed systems
- C07D 513/16 . . Peri-condensed systems
- C07D 513/18 . . Bridged systems
- C07D 513/20 . . Spiro-condensed systems
- C07D 513/22 . in which the condensed system contains four or more hetero rings

C07D 515/00 **Heterocyclic compounds containing in the condensed system at least one hetero ring having nitrogen, oxygen, and sulfur atoms as the only ring hetero atoms, not provided for in groups [C07D 463/00](#) , [C07D 477/00](#) or [C07D 499/00](#) to [C07D 507/00](#)**

- C07D 515/02 . in which the condensed system contains two hetero rings
- C07D 515/04 . . Ortho-condensed systems
- C07D 515/06 . . Peri-condensed systems
- C07D 515/08 . . Bridged systems
- C07D 515/10 . . Spiro-condensed systems
- C07D 515/12 . in which the condensed system contains three hetero rings
- C07D 515/14 . . Ortho-condensed systems
- C07D 515/16 . . Peri-condensed systems
- C07D 515/18 . . Bridged systems
- C07D 515/20 . . Spiro-condensed systems
- C07D 515/22 . in which the condensed system contains four or more hetero rings

C07D 517/00 **Heterocyclic compounds containing in the condensed system at least one hetero ring having selenium, tellurium or halogen atoms as ring hetero atoms**

- C07D 517/02 . in which the condensed system contains two hetero rings
- C07D 517/04 . . Ortho-condensed systems
- C07D 517/06 . . Peri-condensed systems
- C07D 517/08 . . Bridged systems
- C07D 517/10 . . Spiro-condensed systems
- C07D 517/12 . in which the condensed system contains three hetero rings
- C07D 517/14 . . Ortho-condensed systems
- C07D 517/16 . . Peri-condensed systems
- C07D 517/18 . . Bridged systems

- C07D 517/20** . . Spiro-condensed systems
- C07D 517/22** . in which the condensed system contains four or more hetero rings
- C07D 519/00** **Heterocyclic compounds containing more than one system of two or more relevant hetero rings condensed among themselves or condensed with a common carbocyclic ring system not provided for in groups [C07D 453/00](#) or [C07D 455/00](#)**
- C07D 519/02** . Ergot alkaloids of the cyclic peptide type
- C07D 519/04** . Dimeric indole alkaloids, e.g. vincaläuboblastine
- C07D 519/06** . containing at least one condensed beta-lactam ring system, provided for by groups [C07D 463/00](#) , [C07D 477/00](#) or [C07D 499/00](#) to [C07D 507/00](#) , e.g. a penem or a cepham system

C07D 521/00 **Heterocyclic compounds containing unspecified hetero rings**

NOTE

This group is only used for the classification of heterocyclic compounds the chemical structure of which is not specified, i.e. only in those cases where the heterocyclic compounds cannot be classified in any of groups [C07D 201/00](#) to [C07D 519/00](#)

Guide heading:

C07D 2201/00 **Preparation, separation, purification or stabilisation of unsubstituted lactams**

- C07D 2201/02** . Preparation of lactams
- C07D 2201/025** . . by methods not provided for by [C07D 201/04](#) to [C07D 201/12](#)

C07D 2203/00 **Heterocyclic compounds containing three-membered rings with one nitrogen atom as the only ring hetero atom**

- C07D 2203/04** . not condensed with other rings
- C07D 2203/045** . . having double bonds between ring members or between ring members and non-ring members
- C07D 2203/06** . . having no double bonds between ring members or between ring members and non-ring members
- C07D 2203/08** . . . with only hydrogen atoms, hydrocarbon or substituted hydrocarbon radicals, directly attached to the ring nitrogen atom
- C07D 2203/083** not provided for by [C07D 203/08B](#) to [C07D 203/14](#) D, e.g. Hydrogen
- C07D 2203/086** Radicals substituted by carbon atoms having three bonds to hetero atoms with at most one bond to halogen e.g. ester or nitrile radicals
- C07D 2203/14** with carbocyclic rings directly attached to the ring nitrogen atom
- C07D 2203/143** with quinones or hydroquinones (optionally condensed by carbocyclic

		rings or ring systems)
C07D 2203/146	.....	not provided for by C07D 203/14 C
C07D 2203/22	...	with hetero atoms directly attached to the ring nitrogen atom
C07D 2203/225	....	not provided for by C07D 203/24
C07D 2207/00		Heterocyclic compounds containing five-membered rings not condensed with other rings, with one nitrogen atom as the only ring hetero atom
		<u>NOTE</u>
		Pyrrolidines having only hydrogen atoms attached to the ring carbon atoms are classified in C07D 295/00
C07D 2207/02	.	with only hydrogen or carbon atoms directly attached to the ring nitrogen atom
C07D 2207/025	..	having more than three double bonds between ring members or between ring members and non-ring members
C07D 2207/04	..	having no double bonds between ring members or between ring members and non-ring members
C07D 2207/08	...	with hydrocarbon radicals, substituted by hetero atoms, attached to ring carbon atoms
C07D 2207/085	....	Radicals not provided for by C07D 207/09
C07D 2207/18	..	having one double bond between ring members or between a ring member and a non-ring member
C07D 2207/22	...	with hetero atoms or with carbon atoms having three bonds to hetero atoms, with at the most one bond to halogen, e.g. ester or nitrile radicals, directly attached to ring carbon atoms
C07D 2207/24	....	Oxygen or sulfur atoms
C07D 2207/26	.....	2-Pyrrolidones
C07D 2207/2603	.....	with only hydrogen atoms or hydrocarbon radicals attached to ring carbon atoms
C07D 2207/2606	.....	with only hydrogen atoms or hydrocarbon radicals attached to the ring nitrogen atom
C07D 2207/2609	.....	with substituted hydrocarbon radicals attached to the ring nitrogen atom
C07D 2207/2612	.....	with the ring nitrogen atom acylated by a carboxylic or a carbonic acyl radical, or their nitrogen or sulfur analogs
C07D 2207/2615	.....	with substituted hydrocarbon radicals attached to ring carbon atoms
C07D 2207/2618	.....	with heteroatoms or carbon atoms having three bonds to heteroatoms, with at the most one to halogen, e.g. ester or nitrile radicals, directly attached to ring carbon atoms
C07D 2207/2621	.....	Oxygen or sulfur atoms
C07D 2207/2624	.....	Nitrogen atoms not forming part of a nitro radical
C07D 2207/2627	.....	Carbon atoms having three bonds to heteroatoms, with at the most one to halogen, e.g. ester or nitrile radical
C07D 2207/30	..	having two double bonds between ring members or between ring members and non-ring members
C07D 2207/32	...	with only hydrogen atoms, hydrocarbon or substituted hydrocarbon radicals, directly attached to ring carbon atoms

C07D 2207/3203	....	with only hydrogen atoms or hydrocarbon radicals attached to ring carbon atoms
C07D 2207/3206	.....	with only hydrogen atoms or hydrocarbon radicals attached to the ring nitrogen atom
C07D 2207/3209	.....	with substituted hydrocarbon radicals attached to the ring nitrogen atom
C07D 2207/3212	.....	radicals substituted by carbon atoms having three bonds to heteroatoms, with at the most one to halogen, e.g. ester or nitrile radicals
C07D 2207/3215	.....	with the ring nitrogen atom acylated by a carboxylic or a carbonic acyl radical, or their nitrogen or sulfur analogs
C07D 2207/3218	....	with substituted hydrocarbon radicals attached to ring carbon atoms
C07D 2207/3221	.....	radicals substituted by oxygen or sulfur atoms
C07D 2207/3224	.....	radicals substituted by nitrogen atoms, not forming part of a nitro radical
C07D 2207/3227	.....	radicals substituted by carbon atoms having three bonds to heteroatoms, with at the most one to halogen, e.g. ester or nitrile radicals
C07D 2207/34	...	with heteroatoms or with carbon atoms having three bonds to hetero atoms, with at the most one bond to halogen, e.g. ester or nitrile radicals, directly attached to ring carbon atoms
C07D 2207/36	....	Oxygen or sulfur atoms
C07D 2207/40	.....	2,5-Pyrrolidine-diones
C07D 2207/4005	.....	with only hydrogen atoms or hydrocarbon radicals attached to ring carbon atoms
C07D 2207/401	.....	only hydrogen atoms, e.g. succinimide
C07D 2207/4015	.....	hydrocarbon radicals
C07D 2207/402	.....	alkyl, alkenyl, alkynyl radicals containing more than six carbon atoms, e.g. the polyisobutylene radical
C07D 2207/4025	.....	other hydrocarbon radicals
C07D 2207/403	.....	with substituted hydrocarbon radicals attached to ring carbon atoms
C07D 2207/4035	.....	with heteroatoms or carbon atoms having three bonds to heteroatoms, with at the most one to halogen, e.g. ester or nitrile radicals, directly attached to ring carbon atoms
C07D 2207/44	..	having three double bonds between ring members or between ring members and non-ring members
C07D 2207/4404	...	not provided for by C07D 207/44D to C07D 207/44D4
C07D 2207/4408	...	with two double bonded oxygen atoms in positions 2 and 5
C07D 2207/4413	....	with only hydrogen atoms or hydrocarbon radicals attached to ring carbon atoms
C07D 2207/4417	.....	with only hydrogen atoms or hydrocarbon radicals attached to the ring nitrogen atom, e.g. maleimide
C07D 2207/4422	.....	with substituted hydrocarbon radicals attached to the ring nitrogen atom
C07D 2207/4426	....	with the ring nitrogen atom acylated by a carboxylic or a carbonic acyl radical, or their nitrogen or sulfur analogs
C07D 2207/4431	....	with substituted hydrocarbon radicals attached to ring carbon atoms
C07D 2207/4435	....	with heteroatoms or carbon atoms, having three bonds to heteroatoms, with at the most one to halogen, e.g. ester or nitrile radicals directly attached to ring carbon atoms

C07D 2209/00	Heterocyclic compounds containing five-membered rings, condensed with other rings, with one nitrogen atom as the only ring hetero atom
C07D 2209/02	. condensed with one carbocyclic ring
C07D 2209/04	.. Indoles Hydrogenated indoles
C07D 2209/045	... Attached in position 3 to a phenyl or a substituted phenyl radical, and in position 2 to an aminomethyl or substituted aminomethyl radical, or to a carbon atom having three bonds to hetero atoms with at the most one bond to halogen, e.g. ester or nitrile radicals
C07D 2209/08	... with only hydrogen atoms or radicals containing only hydrogen and carbon atoms, directly attached to carbon atoms of the hetero ring
C07D 2209/083	.... Attached in position 4,5,6 or 7 to a -OCH ₂ CH(OH)CH ₂ NH ₂ radical, or such a substituted radical
C07D 2209/086	.... Compounds containing more than one non-condensed indole-ring system in their molecule
C07D 2209/44	.. Iso-indoles Hydrogenated iso-indoles
C07D 2209/48	... with oxygen atoms in positions 1 and 3, e.g. phthalimide
C07D 2209/4802	.... 1,3-dioxo derivatives having neither a cyclopropane-containing acyl radical nor at least three halogen atoms in position 4, 5, 6, or 7 nor a substituent in position 4a or 7a
C07D 2209/4805	..... 1,3-dioxo derivatives having two double bonds between ring members or between ring members and non-ring members
C07D 2209/4807	..... 1,3-dioxo derivatives having three double bonds between ring members or between ring members and non-ring members
C07D 2209/481	..... not substituted in position 4, 5, 6 or 7
C07D 2209/4813	..... N-H or N-substituted by a carbon atom
C07D 2209/4815	..... an acyclic carbon atom
C07D 2209/4818	..... an optionally substituted phenyl ring
C07D 2209/4821	..... an optionally substituted bi- or polycyclic ring system
C07D 2209/4823	..... N-substituted by a hetero atom
C07D 2209/4826	..... substituted in position 4, 5, 6 or 7
C07D 2209/4828	..... N-H or N-substituted by a carbon atom
C07D 2209/4831	..... an acyclic carbon atom
C07D 2209/4834	..... an optionally substituted phenyl ring
C07D 2209/4836	..... an optionally substituted bi- or polycyclic ring system
C07D 2209/4839	..... N-substituted by a hetero atom
C07D 2209/4842	..... 1,3-dioxo derivatives having four double bonds between ring members or between ring members and non-ring members
C07D 2209/4844	..... 1,3-dioxo derivatives having five double bonds between ring members or between ring members and non-ring members, i.e. phthalimides
C07D 2209/4847	..... not substituted in position 4, 5, 6 or 7
C07D 2209/4849	..... N-H, i.e. phthalimide (RN 85-41-6)
C07D 2209/4852	..... N-substituted

C07D 2209/4855	.....	substituted in position 4, 5, 6 or 7
C07D 2209/4857	.....	N-H or N-substituted by a carbon atom
C07D 2209/486	.....	N-substituted by a hetero atom
C07D 2209/4863	.....	{ of formula (1)
		(image)
		}
C07D 2209/4865	.....	L is a direct bond
C07D 2209/4868	.....	L is an indirect link
C07D 2209/4871	.....	{ of formula (2)
		(image)
		}
C07D 2209/4873	.....	L is a direct bond
C07D 2209/4876	.....	L is an indirect link
C07D 2209/4878	.....	compounds containing formula (1) and (2)
C07D 2209/4881	....	1,3-dioxo derivatives having a cyclopropane-containing acyl radical or at least three halogen atoms in position 4, 5, 6, or 7 or a substituent in position 4a or 7a
C07D 2209/4884	....	with a cyclopropane-containing acyl radical in the molecule
C07D 2209/4886	....	with at least three halogen atoms in position 4, 5, 6 or 7
C07D 2209/4889	....	substituted in position 4a or 7a
C07D 2209/4892	....	1-oxo-3-oxy derivatives
C07D 2209/4894	....	substituted in position 4a or 7a
C07D 2209/4897	....	not provided for by C07D 209/48 to C07D 209/48H1
C07D 2209/56	.	Ring systems containing three or more rings
C07D 2209/565	..	Pyrrol [b,c,d condensed with carbocyclic rings or ring systems]
C07D 2209/58	..	[b]- or [c]-condensed
C07D 2209/585	...	Ring systems not provided for by C07D 209/60 to C07D 209/78
C07D 2209/80	..	[b, c]- or [b, d]-condensed
C07D 2209/805	...	Ring systems not provided for by C07D 209/82 to C07D 209/90
C07D 2213/00		Heterocyclic compounds containing six-membered rings, not condensed with other rings, with one nitrogen atom as the only ring hetero atom and three or more double bonds between ring members or between ring members and non-ring members
C07D 2213/02	.	having three double bonds between ring members or between ring members and non-ring members
C07D 2213/04	..	having no bond between the ring nitrogen atom and a non-ring member or having only hydrogen or carbon atoms directly attached to the ring nitrogen atom
C07D 2213/06	...	containing only hydrogen and carbon atoms in addition to the ring nitrogen atom
C07D 2213/061	....	Purification Separation
C07D 2213/062	....	Stabilisation

C07D 2213/064	....	Complexes
C07D 2213/065	....	Preparation by methods not provided for by C07D 213/06F to C07D 213/14
C07D 2213/067	....	Preparation from compounds already containing a pyridine ring
C07D 2213/068	....	Preparation by dehydrogenation of hydrogenated pyridines
C07D 2213/08	....	Preparation by ring-closure
C07D 2213/083	.....	Not involving ammonia, ammonium salts or amines
C07D 2213/086	.....	Involving ammonia, ammonium salts or amines, e.g. from saturated or unsaturated compounds, from aldehydes, their cyclic polymers
C07D 2213/16	....	Containing only one pyridine ring
C07D 2213/163	.....	containing two or more pyridine rings, not directly linked together, their salts and quaternary compounds
C07D 2213/166	.....	containing only one pyridine ring
C07D 2213/20	.....	Quaternary compounds thereof
C07D 2213/201	.....	with ring nitrogen atom attached to hydrocarbon or substituted hydrocarbon radicals
C07D 2213/202	.....	radicals containing only hydrogen and carbon atoms
C07D 2213/203	.....	substituted hydrocarbon radicals
C07D 2213/204	.....	not provided for in C07D 213/20B2B to C07D 213/20B2E
C07D 2213/205	.....	oxygen atoms
C07D 2213/206	.....	sulfur atoms, e.g. sulfonic acid
C07D 2213/207	.....	nitrogen atoms, not forming part of a nitro radical
C07D 2213/208	.....	carbon atoms having three bonds to heteroatoms with at the most one to halogen, e.g. ester or nitrile radicals
C07D 2213/209	.....	with ring nitrogen directly attached to carboxylic or carbonic acyl radicals
C07D 2213/22	....	containing two or more pyridine rings directly linked together, e.g. bipyridyl
C07D 2213/223	.....	linked through at least one ring nitrogen atom
C07D 2213/226	.....	linked through ring carbon atoms, e.g. bipyridyl
C07D 2213/24	...	with substituted hydrocarbon radicals attached to ring carbon atoms
C07D 2213/28	....	Radicals substituted by singly-bound oxygen or sulfur atoms (bound to the same carbon atom C07D 213/44)
C07D 2213/30	.....	Oxygen atoms
C07D 2213/301	.....	unsubstituted hydroxy
C07D 2213/302	.....	ethers
C07D 2213/304	.....	esters
C07D 2213/305	.....	from carboxylic acids, their nitrogen or sulfur analogs
C07D 2213/307	.....	from carbonic acids, their nitrogen or sulfur analogs
C07D 2213/308	.....	with hetero atoms attached to the oxygen atoms, e.g. -O-SO ₃ H
C07D 2213/36	....	Radicals substituted by singly-bound nitrogen atoms (nitro radicals C07D 213/26)
C07D 2213/40	.....	Acylated substituent nitrogen atom
C07D 2213/403	.....	from carboxylic acids, their nitrogen or sulfur analogs
C07D 2213/406	.....	from carbonic acids, their nitrogen or sulfur analogs
C07D 2213/42	.....	having hetero atoms attached to the substituent nitrogen atom (nitro

radicals [C07D 213/26](#))

C07D 2213/423	.....	not provided for by C07D 213/42 F, e.g. .NHOH
C07D 2213/426	.....	attached to nitrogen atoms, e.g. hydrazines
C07D 2213/44	....	Radicals substituted by doubly-bound oxygen, sulfur, or nitrogen atoms, or by two such atoms singly-bound to the same carbon atom
C07D 2213/53	.....	Nitrogen atoms
C07D 2213/532	.....	without heteroatoms attached to the substituent nitrogen atom
C07D 2213/534	.....	having heteroatoms attached to the substituent nitrogen atom
C07D 2213/536	.....	not provided for by C07D 213/53C5 , e.g. =NOH
C07D 2213/538	.....	attached to nitrogen atoms, e.g. hydrazones
C07D 2213/54	....	Radicals substituted by carbon atoms having three bonds to heteroatoms, with at the most one to halogen, e.g. ester or nitrile radicals
C07D 2213/545	.....	these carbon atoms having at least one bond to a nitrogen atom which is attached to a further heteroatom i.e. -C
C07D 2213/60	...	with heteroatoms or with carbon atoms having three bonds to hetero atoms, with at the most one to halogen, e.g. ester or nitrile radicals, directly attached to ring carbon atoms
C07D 2213/62	....	Oxygen or sulfur atoms
C07D 2213/63	.....	One oxygen atom
C07D 2213/64	.....	attached in position 2 or 6
C07D 2213/6407	.....	not provided for by C07D 213/64B or C07D 213/64 C
C07D 2213/6415	.....	[N: 2-Phenoxypyridines or substituted derivatives, e.g.
		(image)
]
C07D 2213/6422	.....	with a cyclopropane-containing acyl radical in the molecule, e.g. chrysanthemates
C07D 2213/65	.....	attached in position 3 or 5
C07D 2213/66	.....	having in position 3 an oxygen atom and in each of the positions 4 and 5 a carbon atom bound to an oxygen, sulfur or nitrogen atom, e.g. pyridoxal
C07D 2213/665	.....	not provided for by C07D 213/67 , e.g. pyridoxal, pyridoxamin
C07D 2213/69	.....	Two or more oxygen atoms
C07D 2213/693	.....	two oxygen atoms
C07D 2213/696	.....	three or more more oxygen atoms
C07D 2213/70	....	Sulfur atoms
C07D 2213/702	.....	attached in position 2 or 6
C07D 2213/705	.....	attached in positions 3 or 5
C07D 2213/707	.....	attached in position 4
C07D 2213/71	.....	to which a second hetero atom is attached
C07D 2213/715	.....	Sulfur atom
C07D 2213/72	....	Nitrogen atoms (nitro radicals C07D 213/61)
C07D 2213/73	.....	Unsubstituted amino or imino radicals
C07D 2213/731	.....	with the remaining ring carbon atoms only attached to hydrogen atoms
C07D 2213/732	.....	with ring carbon atoms attached to hydrocarbon radicals containing

		only hydrogen and carbon atoms
C07D 2213/733	.....	with ring carbon atoms attached to substituted hydrocarbon radicals
C07D 2213/734	.....	with ring carbon atoms directly attached to other heteroatoms
C07D 2213/735	.....	nitro radicals
C07D 2213/736	.....	halogen atoms
C07D 2213/737	.....	oxygen atoms
C07D 2213/738	.....	sulfur atoms
C07D 2213/74	.....	Amino or imino radicals substituted by hydrocarbon or substituted hydrocarbon radicals
C07D 2213/741	.....	hydrocarbon radicals containing only hydrogen and carbon atoms
C07D 2213/742	.....	hydrocarbon radicals substituted by halogen atoms or nitro radicals
C07D 2213/743	.....	hydrocarbon radicals substituted by oxygen, nitrogen or sulfur atoms
C07D 2213/745	.....	oxygen atoms
C07D 2213/746	.....	sulfur atoms
C07D 2213/747	.....	nitrogen atoms
C07D 2213/748	.....	hydrocarbon radicals substituted by carbon atoms having three bonds to heteroatoms, with at the most one to halogen, e.g. ester or nitrile radicals
C07D 2213/75	.....	Amino or imino radicals, acylated by carboxylic or carbonic acids, or by sulfur or nitrogen analogues thereof, e.g. carbamates
C07D 2213/751	.....	from carboxylic acids, their nitrogen or sulfur analogs
C07D 2213/752	.....	with the remaining ring carbon atoms only attached to hydrogen atoms
C07D 2213/753	.....	with ring carbon atoms attached to hydrocarbon radicals containing only hydrogen and carbon atoms
C07D 2213/755	.....	with ring carbon atoms attached to substituted hydrocarbon radicals
C07D 2213/756	.....	with ring carbon atoms directly attached to other heteroatoms
C07D 2213/757	.....	from carbonic acids, their nitrogen or sulfur analogs
C07D 2213/758	.....	with the structure -C(=y)-N< (Y being O,S,N) , e.g. urea
C07D 2213/76	.....	to which a second hetero atom is attached (nitro radicals C07D 213/61)
C07D 2213/763	.....	oxygen atoms
C07D 2213/766	.....	sulfur atoms
C07D 2213/77	.....	Hydrazine radicals
C07D 2213/773	.....	the first nitrogen atom is involved in a multiple bond, e.g.
		(image) , Py-N=N-, Py-N=N
C07D 2213/776	.....	the first nitrogen atom is not involved in a multiple bond, e.g. Py-N-N< , Py-N-N=
C07D 2213/78	....	Carbon atoms having three bonds to hetero atoms, with at the most one to halogen, e.g. ester or nitrile radicals
C07D 2213/782	.....	Purification Separation Crystallisation Isolation

		Solubilisation
C07D 2213/784	.....	having at least one bond to a nitrogen atom which is attached to further hetero atoms, e.g. C=N-Z C
C07D 2213/786	.....	Amidines
C07D 2213/788	.....	having one bond to halogen, e.g. carboxylic acid halides
C07D 2213/79	.....	Acids Esters
C07D 2213/7907	.....	General processes for preparation
C07D 2213/7915	.....	of acids Salts
C07D 2213/7923	.....	of esters
C07D 2213/793	.....	Compounds according to more than one of C07D 213/79 E, C07D 213/79 F, C07D 213/80
C07D 2213/7938	.....	Acids Salts
C07D 2213/7946	.....	Esters
C07D 2213/7953	.....	in positions 2 or 6
C07D 2213/7961	.....	Acids Salts
C07D 2213/7969	.....	Esters
C07D 2213/7976	.....	in position 4
C07D 2213/7984	.....	Acids Salts
C07D 2213/7992	.....	Esters
C07D 2213/80	.....	in position 3
C07D 2213/8002	.....	Acids Salts
C07D 2213/8005	.....	with the remaining ring carbon atoms only attached to hydrogen, hydrocarbon or substituted hydrocarbon radicals
C07D 2213/8008	.....	with ring carbon atoms directly attached to halogen atoms or nitro radicals
C07D 2213/801	.....	with ring carbon atoms directly attached to hetero atoms
C07D 2213/8013	.....	with ring carbon atoms directly attached to further carbon atoms having three bonds to hetero atoms, with at the most one to halogen, i.e. -C(=O)X, CO ₂ H or its salts (X is halogen)
C07D 2213/8016	.....	Esters
C07D 2213/8019	.....	with the remaining ring carbon atoms only attached to hydrogen, hydrocarbon or substituted hydrocarbon radicals
C07D 2213/8021	.....	with ring carbon atoms directly attached to halogen atoms or nitro radicals
C07D 2213/8024	.....	with ring carbon atoms directly attached to hetero atoms
C07D 2213/8027	.....	with ring carbon atoms directly attached to further carbon atoms having three bonds to hetero atoms, with at the most one to halogen, i.e. C(=O)X, CO ₂ H and salts, CO ₂ R (X is halogen)
C07D 2213/81	.....	Amides Imides

C07D 2213/812	.....	General processes for preparation
C07D 2213/814	.....	Compounds according to more than one of C07D 213/81E to C07D 213/81 F , C07D 213/82
C07D 2213/816	.....	in positions 2 or 6
C07D 2213/818	.....	in position 4
C07D 2213/82	.....	in position 3
C07D 2213/822	.....	with the remaining ring carbon atoms only attached to hydrogen, hydrocarbon or substituted hydrocarbon radicals
C07D 2213/824	.....	with ring carbon atoms directly attached to halogen atoms or nitro radicals
C07D 2213/826	.....	with ring carbon atoms directly attached to hetero atoms
C07D 2213/828	.....	with ring carbon atoms directly attached to further carbon atoms having three bonds to hetero atoms, with at the most one to halogen, i.e. C(=O)X, CO ₂ H and salts, CO ₂ R, C(=O)-N< (X : halogen)
C07D 2213/83	.....	Thio-acids Thio-esters Thio-amides Thio-imides
C07D 2213/833	.....	General processes for preparation
C07D 2213/836	.....	Compounds
C07D 2213/84	.....	Nitriles
C07D 2213/841	.....	general processes for preparation
C07D 2213/843	.....	by ammoxidation
C07D 2213/845	.....	Compounds according to more than one of C07D 213/84 E , C07D 213/84 F , C07D 213/85
C07D 2213/846	.....	in positions 2 or 6
C07D 2213/848	.....	in position 4
C07D 2213/86	.....	Hydrazides Thio or imino analogues thereof
C07D 2213/863	.....	the first nitrogen atom is involved in a multiple bond: C
C07D 2213/866	.....	the first nitrogen atom is not involved in a multiple bond: C
C07D 2213/87	.....	in position 3
C07D 2213/873	.....	the first nitrogen atom is involved in a multiple bond: C(=Y)-N=N-, C(=Y)-N=N , C(-Y)=N-N<
C07D 2213/876	.....	the first nitrogen atom is not involved in a multiple bond: C(=Y)-N-N< , C(=Y)-N-N=
C07D 2213/89	..	with hetero atoms directly attached to the ring nitrogen atom
C07D 2213/892	...	oxygen atom
C07D 2213/894	...	sulfur atom
C07D 2213/896	...	nitrogen atom
C07D 2213/898	...	not provided for by C07D 213/89B to C07D 213/89 D
C07D 2215/00		Heterocyclic compounds containing quinoline or hydrogenated quinoline ring systems

- C07D 2215/02 . having no bond between the ring nitrogen atom and a non-ring member or having only hydrogen atoms or carbon atoms directly attached to the ring nitrogen atom
- C07D 2215/04 . . with only hydrogen atoms or radicals containing only hydrogen and carbon atoms, directly attached to the ring carbon atoms
- C07D 2215/045 . . . with ring nitrogen atom having only a single and a double bond to the ring carbon atoms in positions 2 and 8a
- C07D 2215/16 . . with hetero atoms or with carbon atoms having three bonds to hetero atoms with at the most one bond to halogen, e.g. ester or nitrile radicals, directly attached to ring carbon atoms
- C07D 2215/20 . . . Oxygen atoms ([quinophthalones C09B 25/00](#))
- C07D 2215/22 attached in position 2 or 4
- C07D 2215/221 attached in position 2
- C07D 2215/223 attached in position 4
- C07D 2215/225 attached in positions 2 and 4
- C07D 2215/38 . . . Nitrogen atoms ([nitro radicals C07D 215/18](#))
- C07D 2215/383 attached in position 2
- C07D 2215/386 attached in position 3
- C07D 2215/48 . . . Carbon atoms having three bonds to hetero atoms with at the most one bond to halogen
- C07D 2215/54 attached in position 3
- C07D 2215/56 with oxygen atoms in position 4
- C07D 2215/565 with a nitrogen or halogen atom directly attached in position 7

- C07D 2221/00** **Heterocyclic compounds containing six-membered rings having one nitrogen atom as the only ring hetero atom, not provided for by groups [C07D 211/00](#) to [C07D 219/00](#)**

- C07D 2221/02 . condensed with carbocyclic rings or ring systems
- C07D 2221/04 . . ortho- or peri-condensed ring systems
- C07D 2221/045 . . . bicyclic systems not provided for by [C07D 215/00](#) and [C07D 217/00](#)
- C07D 2221/06 . . . Ring systems of three rings
- C07D 2221/14 Aza-phenalenes, e.g. 1,8-naphthalimide
- C07D 2221/143 Benz(die)isoquinolines, e.g. 1,8-naphthalimide
- C07D 2221/146 Benz(die)quinolines
- C07D 2221/20 . . Spiro-condensed ring systems
- C07D 2221/203 . . . Bicyclic systems
- C07D 2221/206 . . . tricyclic and higher systems
- C07D 2221/22 . . Bridged ring systems
- C07D 2221/225 . . . bicyclic systems not provided for by [C07D 221/24](#) , e.g.

- ([image](#))
- C07D 2221/24 . . . Camphidines
- C07D 2221/245 condensed 3-azabicyclo[3.2.1]octanes]

C07D 2223/00 **Heterocyclic compounds containing seven-membered rings having one nitrogen atom as the only ring hetero atom**

NOTE

Hexamethylene imines or 3-aza-bicyclo [3.2.2] nonanes, having only hydrogen atoms attached to the ring carbon atoms, are classified in [C07D 295/00](#)

C07D 2223/14 . condensed with carbocyclic rings or ring systems

C07D 2223/16 .. Benzazepines
Hydrogenated benzazepines

C07D 2223/162 ... 1-Benzazepines, i.e. benz(b)azepines
Hydrogenated 1-benzazepines

C07D 2223/165 ... 2-Benzazepines, i.e. benz(c)azepines
Hydrogenated 2-benzazepines

C07D 2223/167 ... 3-Benzazepines, i.e. benz(d)azepines
Hydrogenated 3-benzazepines

C07D 2231/00 **Heterocyclic compounds containing 1,2-diazole or hydrogenated 1,2-diazole rings**

C07D 2231/02 . not condensed with other rings

C07D 2231/06 .. having one double bond between ring members or between ring members and non-ring members

C07D 2231/061 ... with the ring nitrogen atoms only attached to hydrogen atoms or to hydrocarbon or substituted hydrocarbon radicals

C07D 2231/062 with the ring carbon atoms not directly attached to aryl, substituted aryl, styryl or substituted styryl radicals

C07D 2231/064 with ring carbon atoms directly attached to aryl, substituted aryl, styryl or substituted styryl radicals

C07D 2231/065 1,3-di-

C07D 2231/067 ... with ring nitrogen atoms directly attached to acyl or to hetero atoms

C07D 2231/068 ... with ring carbon atoms directly attached to hetero atoms or to carbon atoms having three bonds to hetero atoms, with at the most one to halogen, e.g. ester or nitrile radicals

C07D 2231/10 .. having two or three double bonds between ring members or between ring members and non-ring members

C07D 2231/12 ... with only hydrogen atoms, hydrocarbon or substituted hydrocarbon radicals, directly attached to ring carbon atoms

C07D 2231/121 ring nitrogen atoms not attached to acyl radicals or to hetero atoms

C07D 2231/123 ring carbon atoms attached only to hydrogen atoms or to hydrocarbon radicals

C07D 2231/125 ring carbon atoms attached to substituted hydrocarbon radicals

C07D 2231/126 ring carbon atoms attached to aryl or substituted aryl radicals

C07D 2231/128 ring nitrogen atoms directly attached to acyl radicals or to hetero atoms

C07D 2231/14 ... with hetero atoms or with carbon atoms having three bonds to hetero atoms with at the most one bond to halogen, e.g. ester or nitrile radicals, directly attached to ring carbon atoms

C07D 2231/28	....	Two oxygen or sulfur atoms
C07D 2231/30	.....	attached in position 3 and 5
C07D 2231/32	.....	Oxygen atoms
C07D 2231/325	.....	1,2-diaryl-3,5-dioxo or -dioxy derivatives with the ring carbon atom in position 4 attached to hydrogen, substituted or unsubstituted hydrocarbon radicals to hetero atoms or to carbon atoms having three bonds to hetero atoms, with at the most one to halogen, e.g. ester or nitrile radicals
C07D 2231/38	....	Nitrogen atoms (nitro radicals C07D 231/16)
C07D 2231/381	.....	which are not acylated, nor attached to hetero atoms
C07D 2231/382	.....	one nitrogen atom, attached in position 3 or 5
C07D 2231/383	.....	unsubstituted amino or imino radical
C07D 2231/384	.....	substituted amino or imino radical, but not by acyl
C07D 2231/385	.....	with hetero atoms or with carbon atoms having three bonds to hetero atoms, with at the most one to halogen, directly attached to ring carbon atoms
C07D 2231/386	.....	one nitrogen atom, attached in position 4
C07D 2231/387	.....	with hetero atoms or with carbon atoms having three bonds to hetero atoms, with at the most one to halogen, directly attached to ring carbon atoms
C07D 2231/388	.....	which are acylated or attached to hetero atoms
C07D 2231/54	.	condensed with carbocyclic rings or ring-systems
C07D 2231/56	..	Benzopyrazoles Hydrogenated benzopyrazoles
C07D 2231/561	...	with only hydrogen, hydrocarbon or substituted hydrocarbon radicals attached in position 3
C07D 2231/562	...	with hetero atoms or with carbon atoms having three bonds to hetero atoms, with at the most one to halogen, e.g. ester or nitrile radicals, directly attached in position 3
C07D 2231/563	....	halogen atoms or nitro radicals
C07D 2231/564	....	oxygen or sulfur atoms
C07D 2231/565	.....	free oxo or unsubstituted enol
C07D 2231/566	.....	substituted oxy
C07D 2231/567	....	nitrogen atoms, not forming part of a nitro radical
C07D 2231/568	....	carbon atoms having three bonds to hetero atoms, with at the most one to halogen, e.g. ester or nitrile radicals
C07D 2233/00		Heterocyclic compounds containing 1,3-diazole or hydrogenated 1,3-diazole rings, not condensed with other rings
C07D 2233/54	.	having two double bonds between ring members or between ring members and non-ring members
C07D 2233/5408	..	ring nitrogen atoms not attached to acyl radicals or to hetero atoms
C07D 2233/5416	...	with hydrocarbon or substituted hydrocarbon radicals attached to ring carbon atoms
C07D 2233/5425	....	hydrocarbon radicals

C07D 2233/5433	....	substituted hydrocarbon radicals
C07D 2233/5441	.....	substituted by halogen atoms or by nitro radicals
C07D 2233/545	.....	substituted by oxygen atoms
C07D 2233/5458	.....	substituted by sulfur atoms
C07D 2233/5466	.....	substituted by nitrogen atoms, not forming part of nitro radicals
C07D 2233/5475	.....	substituted by carbon atoms having three bonds to heteroatoms, with at the most one to halogen, e.g. ester or nitrile radicals
C07D 2233/5483	...	with aryl or substituted aryl radicals attached to ring carbon atoms
C07D 2233/5491	..	ring nitrogen atoms attached to carboxylic or carbonic acyl radicals, or their N and S analogues, or to hetero atoms
C07D 2233/66	..	with hetero atoms or with carbon atoms having three bonds to hetero atoms with at the most one to halogen, e.g. ester or nitrile radicals, directly attached to ring carbon atoms
C07D 2233/665	...	Three or more oxygen atoms, e.g. acyclic hydantoineacetal
C07D 2233/91	...	Nitro radicals
C07D 2233/92	....	attached in position 4 or 5
C07D 2233/922	.....	with hydrocarbon radicals substituted by nitro radicals or by carbon atoms having three bonds to hetero atoms, with at the most one to halogen, e.g. ester or nitrile radicals, attached to other ring members
C07D 2233/925	.....	with hetero atoms directly attached to other ring members
C07D 2233/927	.....	with carbon atoms having three bonds to hetero atoms, with at the most one to halogen, e.g. ester or nitrile radicals, directly attached to other ring members
C07D 2235/00		Heterocyclic compounds containing 1,3-diazole or hydrogenated 1,3-diazole rings, condensed with other rings
C07D 2235/02	.	condensed with carbocyclic rings or ring systems
C07D 2235/022	..	Naphtimidazoles Hydrogenated naphtimidazoles
C07D 2235/024	..	Ring systems of 4 or more rings
C07D 2235/026	..	Ring systems containing carbocyclic rings other than 6-membered
C07D 2235/028	..	Spiro-condensed ring systems
C07D 2235/04	..	Benzimidazoles Hydrogenated benzimidazoles
C07D 2235/06	...	with only hydrogen atoms, hydrocarbon or substituted hydrocarbon radicals, directly attached in position 2
C07D 2235/065	....	only hydrogen atoms
C07D 2235/24	...	with hetero atoms or with carbon atoms having three bonds to hetero atoms with at the most one bond to halogen, e.g. ester or nitrile radicals, directly attached in position 2
C07D 2235/243	....	Halogen atoms or nitro radicals
C07D 2235/246	....	Carbon atoms having three bonds to hetero atoms, with at the most one to halogen, e.g. ester or nitrile radicals
C07D 2235/30	....	Nitrogen atoms not forming part of a nitro radical
C07D 2235/305	.....	Nitrogen acylated by a carbinic acyl radical of the type -C(=Y)N -C(=N)-Y

with Y: O, S, N, e.g. urea

C07D 2239/00	Heterocyclic compounds containing 1,3-diazine or hydrogenated 1,3-diazine rings
C07D 2239/02	. not condensed with other rings
C07D 2239/06	.. having one double bond between ring members or between a ring member and a non-ring member
C07D 2239/062	... with only hydrogen atoms, hydrocarbon or substituted hydrocarbon radicals attached to ring carbon atoms
C07D 2239/064	.... hydrogen atoms or hydrocarbon radicals
C07D 2239/066	.... substituted hydrocarbon radicals
C07D 2239/068	... with heteroatoms or with carbon atoms having three bonds to heteroatoms, with at the most one to halogen, e.g. ester or nitrile radicals, directly attached to ring carbon atoms
C07D 2239/08	... with heteroatoms directly attached in position 2
C07D 2239/10	.... Oxygen or sulfur atoms
C07D 2239/103	..... oxygen atoms
C07D 2239/106	..... sulfur atoms
C07D 2239/20	.. having two double bonds between ring members or between ring members and non-ring members
C07D 2239/22	... with hetero atoms directly attached to ring carbon atoms
C07D 2239/221	.... with only hydrogen atoms, hydrocarbon or substituted hydrocarbon radicals attached in position 2
C07D 2239/223	.... with nitrogen or sulfur atoms directly attached in position 2
C07D 2239/225	.... with oxygen atoms directly attached in position 2
C07D 2239/226	..... not provided for by C07D 239/22D2
C07D 2239/228	..... with further oxygen atoms directly attached to other ring carbon atoms, e.g. dihydrouracil
C07D 2239/24	.. having three or more double bonds between ring members or between ring members and non-ring members
C07D 2239/26	... with only hydrogen atoms, hydrocarbon or substituted hydrocarbon radicals, directly attached to ring carbon atoms
C07D 2239/263	.... hydrogen atoms or hydrocarbon radicals
C07D 2239/266	.... substituted hydrocarbon radicals
C07D 2239/28	... with hetero atoms or with carbon atoms having three bonds to hetero atoms with at the most one bond to halogen, directly attached to ring carbon atoms
C07D 2239/285	.... carbon atoms having three bonds to heteroatoms, with at the most one to halogen, e.g. ester or nitrile radicals
C07D 2239/30	.... Halogen atoms or nitro radicals
C07D 2239/303	..... not provided for by C07D 239/30 C
C07D 2239/306	..... with carbon atoms having three bonds to heteroatoms with at the most one to halogen, e.g. ester or nitrile radicals, directly attached to ring carbon atoms
C07D 2239/32	.... One oxygen, sulfur or nitrogen atom
C07D 2239/34	..... One oxygen atom
C07D 2239/343	..... not provided for by C07D 239/34 C

C07D 2239/346	.....	with halogen atoms, nitro or nitroso radicals or with carbon atoms having three bonds to heteroatoms, with at the most one to halogen, e.g. ester or nitrile radicals, directly attached to ring carbon atoms
C07D 2239/36	.....	as doubly bound atom or as unsubstituted hydroxy radical
C07D 2239/363	.....	not provided for by C07D 239/36 C
C07D 2239/366	.....	with halogen atoms, nitro or nitroso radicals or with carbon atoms having three bonds to heteroatoms, with at the most one to halogen, e.g. ester or nitrile radicals, directly attached to ring carbon atoms
C07D 2239/42	.....	One nitrogen atom (nitro radicals C07D 239/30 ; benzenesulfonamido-pyrimidines C07D 239/69)
C07D 2239/421	.....	with only hydrogen atoms, hydrocarbon or substituted hydrocarbon radicals attached to ring carbon atoms
C07D 2239/422	.....	hydrogen atoms or hydrocarbon radicals
C07D 2239/424	.....	substituted hydrocarbon radicals
C07D 2239/425	.....	with halogen atoms, nitro or nitroso radicals or with carbon atoms having three bonds to heteroatoms, with at the most one to halogen, e.g. ester or nitrile radicals, directly attached to ring carbon atoms
C07D 2239/427	.....	halogen atoms, nitro or nitroso radicals
C07D 2239/428	.....	carbon atoms having three bonds to heteroatoms, with at the most one to halogen, e.g. ester or nitrile radicals
C07D 2239/46	....	Two or more oxygen, sulfur or nitrogen atoms (benzenesulfonamido-pyrimidines C07D 239/69)
C07D 2239/462	.....	Four or more nitrogen atoms, different from nitro or nitroso radicals
C07D 2239/464	.....	One nitrogen atom and one oxygen atom or one sulfur atom
C07D 2239/466	.....	oxygen, e.g. cytosine
C07D 2239/468	.....	sulfur, e.g. thiocytosine
C07D 2239/48	.....	Two nitrogen atoms
C07D 2239/4809	.....	with only hydrogen atoms, hydrocarbon or substituted hydrocarbon radicals attached to ring carbon atoms
C07D 2239/4818	.....	hydrogen atoms, aliphatic or substituted aliphatic radicals
C07D 2239/4827	.....	aryl or substituted aryl radicals
C07D 2239/4836	.....	aralkyl or substituted aralkyl radicals
C07D 2239/4845	.....	not provided for by C07D 239/48B5B
C07D 2239/4854	.....	2,4-diamino-5-(3',4',5'-trimethoxybenzyl) pyrimidine, i.e. trimethoprim
C07D 2239/4863	.....	with halogen atoms, nitro or nitroso radicals, one oxygen or one sulfur atom, or carbon atoms having three bonds to heteroatoms with at the most one to halogen, e.g. ester or nitrile radicals, directly attached to ring carbon atoms
C07D 2239/4872	.....	halogen atoms, nitro or nitroso radicals
C07D 2239/4881	.....	one oxygen or one sulfur atom
C07D 2239/489	.....	carbon atoms having three bonds to heteroatoms, with at the most one to halogen, e.g. ester or nitrile radicals
C07D 2239/52	.....	Two oxygen atoms
C07D 2239/54	.....	as doubly bound oxygen atoms or as unsubstituted hydroxy radicals
C07D 2239/5406	.....	with only hydrogen atoms, hydrocarbon or substituted hydrocarbon

		radicals attached to ring carbon atoms
C07D 2239/5412	.....	hydrogen atoms or hydrocarbon radicals, e.g. uracil
C07D 2239/5418	.....	substituted hydrocarbon radicals
C07D 2239/5425	.....	with halogen atoms, nitrogen atoms, or carbon atoms having three bonds to heteroatoms, with at the most one to halogen, e.g. ester or nitrile radicals, directly attached to ring carbon atoms
C07D 2239/5431	.....	halogen atoms, nitro or nitroso radicals, e.g. fluorouracil
C07D 2239/5437	.....	nitrogen atoms, not forming part of a nitro or nitroso radical
C07D 2239/5443	.....	carbon atoms having three bonds to heteroatoms, with at the most one to halogen, e.g. ester or nitrile radicals, e.g. orotic acid
C07D 2239/56	.....	One oxygen atom and one sulfur atom
C07D 2239/563	.....	not provided for by C07D 239/56 C
C07D 2239/566	.....	with halogen atoms, nitrogen atoms, or carbon atoms having three bonds to heteroatoms, with at the most one to halogen, e.g. ester or nitrile radicals, directly attached to ring carbon atoms

[C07D 2241/00](#) Heterocyclic compounds containing 1,4-diazine or hydrogenated 1,4-diazine rings

NOTE

Piperazines with only hydrogen atoms directly attached to ring carbon atoms are classified in group [C07D 295/00](#)

C07D 2241/02	.	not condensed with other rings
C07D 2241/025	..	having more than 3 double bonds between ring members or between ring members and non-ring members
C07D 2241/06	..	having one or two double bonds between ring members or between ring members and non-ring members
C07D 2241/065	...	without oxygen atoms directly attached to ring carbon atoms
C07D 2241/10	..	having three double bonds between ring members or between ring members and non-ring members
C07D 2241/12	...	with only hydrogen atoms, hydrocarbon or substituted hydrocarbon radicals, directly attached to ring carbon atoms
C07D 2241/123	....	with only hydrogen atoms or hydrocarbon radicals attached to ring carbon atoms
C07D 2241/126	....	with substituted hydrocarbon radicals attached to ring carbon atoms
C07D 2241/14	...	with hetero atoms or with carbon atoms having three bonds to hetero atoms with at the most one bond to halogen, e.g. ester or nitrile radicals, directly attached to ring carbon atoms
C07D 2241/24	....	Carbon atoms having three bonds to hetero atoms with at the most one bond to halogen, e.g. ester or nitrile radicals
C07D 2241/245	.....	without nitrogen atoms directly attached to other ring carbon atoms
C07D 2241/36	.	condensed with carbocyclic rings or ring systems
C07D 2241/38	..	with only hydrogen or carbon atoms directly attached to the ring nitrogen atoms
C07D 2241/382	...	not provided for by C07D 241/38 to C07D 241/48

- C07D 2241/385 . . . containing carbocyclic rings other than six-membered rings
- C07D 2241/387 . . . Spiro-condensed systems
- C07D 2241/50 . . with hetero atoms directly attached to ring nitrogen atoms
- C07D 2241/52 . . . Oxygen atoms
- C07D 2241/521 not provided for by [C07D 241/52B](#) to [C07D 241/52 D](#)
- C07D 2241/523 Benzopyrazines
Hydrogenated benzopyrazines
- C07D 2241/525 not provided for by [C07D 241/52B5](#)
- C07D 2241/526 with carbon atoms having three bonds to hetero atoms, with at the most one to halogen, e.g. ester or nitrile radicals, directly attached to carbon atoms of the heteroring
- C07D 2241/528 Phenazines
hydrogenated phenazines

- C07D 2249/00 Heterocyclic compounds containing five-membered rings having three nitrogen atoms as the only ring hetero atoms**

- C07D 2249/02 . not condensed with other rings
- C07D 2249/08 . . 1,2,4-Triazoles
Hydrogenated 1,2,4-triazoles
- C07D 2249/081 . . . ring nitrogen atoms not attached to acyl radicals or to hetero atoms
- C07D 2249/082 with hydrocarbon or substituted hydrocarbon radicals attached to ring carbon atoms
- C07D 2249/084 hydrocarbon radicals
- C07D 2249/085 substituted hydrocarbon radicals
- C07D 2249/087 with aryl or substituted aryl radicals attached to ring carbon atoms
- C07D 2249/088 . . . ring nitrogen atoms attached to carboxylic or carbonic acyl radicals, or their N or S analogues, or to hetero atoms

- C07D 2249/16 . condensed with carbocyclic rings or ring systems
- C07D 2249/165 . . not provided for by [C07D 249/18](#) to [C07D 249/24](#)

- C07D 2253/00 Heterocyclic compounds containing six-membered rings having three nitrogen atoms as the only ring hetero atoms, not provided for by group [C07D 251/00](#)**

- C07D 2253/02 . not condensed with other rings
- C07D 2253/06 . . 1,2,4-Triazines
- C07D 2253/0606 . . . having one double bond between ring members or between ring members and non-ring members
- C07D 2253/0612 . . . having one double bond between ring members or between a ring member and a non-ring member
- C07D 2253/0618 . . . having two double bonds between ring members or between ring members and non-ring members
- C07D 2253/0625 . . . having three or more bonds between ring members or between ring members and non-ring members
- C07D 2253/0631 with only hydrogen atoms, hydrocarbon or substituted hydrocarbon radicals attached to ring carbon atoms

- C07D 2253/0637 with hetero atoms or carbon atoms having three bonds to hetero atoms, with at the most one to halogen, e.g. ester or nitrile radicals, directly attached to ring carbon atoms
- C07D 2253/0643 two hetero atoms in positions 3 and 5
- C07D 2253/08 . condensed with carbocyclic rings or ring systems
- C07D 2253/083 . . Condensed 1,2,3- triazines and hydrogenated derivatives
- C07D 2253/086 . . Condensed 1,2,4- triazines and hydrogenated derivatives

C07D 2257/00 Heterocyclic compounds containing rings having four nitrogen atoms as the only ring hetero atoms

- C07D 2257/02 . not condensed with other rings
- C07D 2257/025 . . Eight-membered rings
- C07D 2257/04 . . Five-membered rings
- C07D 2257/0406 . . . Compounds containing quaternised ring nitrogen atoms
- C07D 2257/0412 . . . Compounds containing two or more tetrazole rings or hydrogenated tetrazole rings linked - either directly or through a carbon chain - through their ring carbon atom
- C07D 2257/0418 . . . with only hydrogen, hydrocarbon or substituted hydrocarbon radicals attached to the ring carbon atom
- C07D 2257/0425 with ring nitrogen atoms only attached to hydrogen or hydrocarbon radicals
- C07D 2257/0431 with the ring carbon atom only attached to hydrogen or hydrocarbon radicals
- C07D 2257/0437 with the ring carbon atom attached to substituted hydrocarbon radicals
- C07D 2257/0443 not provided for by [C07D 257/04D2C3](#) to [C07D 257/04D2C4](#)
- C07D 2257/045 oxygen or sulfur atoms
- C07D 2257/0456 nitrogen atoms, not forming part of a nitro radical
- C07D 2257/0462 . . . with ring nitrogen atoms attached to substituted hydrocarbon radicals
- C07D 2257/0468 . . . with ring nitrogen atoms attached to hetero atoms or with ring nitrogen atoms acylated by carboxylic or carbonic acyl radicals, or their nitrogen or sulfur analogs
- C07D 2257/0475 . . . with hetero atoms or carbon atoms having three bonds to hetero atoms, with at the most one to halogen, e.g. ester or nitrile radicals, directly attached to the ring carbon atom
- C07D 2257/0481 not provided for by [C07D 257/04E2](#) to [C07D 257/06](#)
- C07D 2257/0487 . . . with oxygen atoms directly attached to the ring carbon atoms
- C07D 2257/0493 . . . with sulfur atoms directly attached to the ring carbon atoms

C07D 2261/00 Heterocyclic compounds containing 1,2-oxazole or hydrogenated 1,2-oxazole rings

- C07D 2261/02 . not condensed with other rings
- C07D 2261/025 . . having no double bonds between ring members or between ring members and non-ring members
- C07D 2261/06 . . having two or more double bonds between ring members or between ring members and non-ring members

- C07D 2261/10 . . . with hetero atoms or with carbon atoms having three bonds to hetero atoms with at the most one bond to halogen, e.g. ester or nitrile radicals, directly attached to ring carbon atoms
- C07D 2261/105 not provided for by [C07D 261/12](#) to [C07D 261/18](#)
- C07D 2263/00 Heterocyclic compounds containing 1,3-oxazole or hydrogenated 1,3-oxazole rings**
- C07D 2263/02 . not condensed with other rings
- C07D 2263/04 . . having no double bonds between ring members or between ring members and non-ring members
- C07D 2263/045 . . . not provided for by [C07D 263/06](#)
- C07D 2263/08 . . having one double bond between ring members or between a ring member and a non-ring member
- C07D 2263/10 . . . with only hydrogen atoms, hydrocarbon or substituted hydrocarbon radicals, directly attached to ring carbon atoms
- C07D 2263/105 not provided for by [C07D 263/12](#) to [C07D 263/14](#)
- C07D 2263/16 . . . with hetero atoms or with carbon atoms having three bonds to hetero atoms with at the most one bond to halogen, e.g. ester or nitrile radicals, directly attached to ring carbon atoms
- C07D 2263/163 not provided for by [C07D 263/16D](#) to [C07D 263/28](#)
- C07D 2263/166 sulfur atoms
- C07D 2263/18 Oxygen atoms
- C07D 2263/185 not attached in position 2
- C07D 2263/20 attached in position 2
- C07D 2263/205 not provided for by [C07D 263/22](#) to [C07D 263/26](#)
- C07D 2263/30 . . having two or three double bonds between ring members or between ring members and non-ring members
- C07D 2263/34 . . . with hetero atoms or with carbon atoms having three bonds to hetero atoms with at the most one bond to halogen, e.g. ester or nitrile radicals, directly attached to ring carbon atoms
- C07D 2263/343 not provided for by [C07D 263/34D](#) to [C07D 263/50](#)
- C07D 2263/346 carbon atoms having three bonds to hetero atoms with at the most one bond to halogen, e.g. ester or nitrile radicals
- C07D 2263/44 Two oxygen atoms
- C07D 2263/442 not provided for by [C07D 263/44D](#) or [C07D 263/44 F](#)
- C07D 2263/445 two oxygen atoms attached in positions 2 and 4
- C07D 2263/447 two oxygen atoms attached in positions 2 and 5
- C07D 2263/52 . condensed with carbocyclic rings or ring systems
- C07D 2263/522 . . not provided for by [C07D 263/52D](#) to [C07D 263/62 F](#)
- C07D 2263/525 . . ortho or peri condensed with rings or ring systems containing a ring other than six-membered
- C07D 2263/527 . . Spiro condensed systems
- C07D 2263/54 . . Benzoxazoles
Hydrogenated benzoxazoles
- C07D 2263/56 . . . with only hydrogen atoms, hydrocarbon or substituted hydrocarbon radicals, directly attached in position 2

- C07D 2263/563 Hydrogen atoms, non-aromatic hydrocarbon or substituted non-aromatic hydrocarbon radicals directly attached in position 2
- C07D 2263/566 aromatic or substituted aromatic rings or ring systems directly attached in position 2
- C07D 2263/58 . . . with hetero atoms or with carbon atoms having three bonds to hetero atoms with at the most one bond to halogen, e.g. ester or nitrile radicals, directly attached in position 2
- C07D 2263/582 hetero atoms not provided for by [C07D 263/58D](#) or [C07D 263/58 F](#)
- C07D 2263/584 oxygen or sulfur atoms
- C07D 2263/586 nitrogen atoms not forming part of a nitro radical
- C07D 2263/588 carbon atoms having three bonds to hetero atoms with at the most one bond to halogen, e.g. ester or nitrile radicals
- C07D 2263/62 . . . having two or more ring systems containing condensed 1,3-oxazole rings
- C07D 2263/622 . . . not provided for by [C07D 263/62D](#) or [C07D 263/62 F](#)
- C07D 2263/625 . . . linked through positions 2 and 2' by a hydrocarbon or substituted hydrocarbon chain, no aromatic rings or ring systems forming part of this chain
- C07D 2263/627 . . . linked through positions 2 and 2' by a hydrocarbon or substituted hydrocarbon chain with aromatic or substituted aromatic rings or ring systems forming part of this chain, or linked through positions 2 and 2' by aromatic or substituted aromatic rings or ring systems

C07D 2265/00 Heterocyclic compounds containing six-membered rings having one nitrogen atom and one oxygen atom as the only ring hetero atoms

NOTE

Morpholines having only hydrogen atoms attached to the ring carbon atoms are classified in [C07D 295/00](#)

- C07D 2265/04 . 1,3-Oxazines
Hydrogenated 1,3-oxazines
- C07D 2265/12 . . condensed with carbocyclic rings or ring systems
- C07D 2265/14 . . . condensed with one six-membered ring
- C07D 2265/145 Benzo-1,3-/or [e oxazines
Benzo-1,3-/ or [d]-oxazines
Hydrogenated derivatives]
- C07D 2265/16 with only hydrogen or carbon atoms directly attached in positions 2 and 4
- C07D 2265/165 Benz[d]oxazines
Hydrogenated derivatives]
- C07D 2265/18 with hetero atoms directly attached in position 2
- C07D 2265/185 Benz[d]oxazines
Hhydrogenated derivatives]
- C07D 2265/20 with hetero atoms directly attached in position 4
- C07D 2265/22 Oxygen atoms
- C07D 2265/225 Benz[d]oxazines and hydrogenated derivates]
- C07D 2265/24 with hetero atoms directly attached in positions 2 and 4
- C07D 2265/26 Two oxygen atoms, e.g. isatoic anhydride

C07D 2265/265	..... Benz[d]oxazines and hydrogenated derivatives, e.g. isatoic anhydride]
C07D 2265/28	. 1,4-Oxazines Hydrogenated 1,4-oxazines
C07D 2265/30	.. not condensed with other rings
C07D 2265/303	... with only hydrogen atoms, hydrocarbon or substituted hydrocarbon radicals attached to ring carbon atoms
C07D 2265/306	... with hetero atoms or with carbon atoms having three bonds to hetero atoms, with at the most one to halogen, e.g. ester or nitrile radicals, directly attached to ring carbon atoms
C07D 2265/32	... with oxygen atoms directly attached to ring carbon atoms
C07D 2265/325	.... two oxygen atoms in positions 3 and 5
C07D 2271/00	Heterocyclic compounds containing five-membered rings having two nitrogen atoms and one oxygen atom as the only ring hetero atoms
C07D 2271/02	. not condensed with other rings
C07D 2271/06	.. 1,2,4-Oxadiazoles Hydrogenated 1,2,4-oxadiazoles
C07D 2271/061	... without oxygen, sulfur or nitrogen atoms directly attached to ring carbon atoms
C07D 2271/063	... with oxygen, sulfur or nitrogen atoms directly attached to ring carbon atoms
C07D 2271/065	.... One oxygen atom in position 3 or 5, in its keto or unsubstituted enol form
C07D 2271/066	.... Two oxygen atoms in positions 3 and 5 One oxygen atom and one sulfur atom in positions 3 and 5 Two sulfur atoms in positions 3 and 5, in their keto, thiono or unsubstituted enol forms
C07D 2271/068	.... Nitrogen atoms
C07D 2271/10	.. 1,3,4-Oxadiazoles Hydrogenated 1,3,4-oxadiazoles
C07D 2271/101	... not provided for by C07D 271/10C to C07D 271/10D3
C07D 2271/102	... with aryl radicals directly attached in positions 2 and 5
C07D 2271/104	... with oxygen, sulfur or nitrogen atoms directly attached to ring carbon atoms
C07D 2271/105	.... One oxygen atom in position 2 or 5, in its keto or unsubstituted enol form
C07D 2273/00	Heterocyclic compounds containing rings having nitrogen and oxygen atoms as the only ring hetero atoms, not provided for by groups C07D 261/00 to C07D 271/00
C07D 2273/001	. Five-membered rings
C07D 2273/003	.. with three ring hetero atoms
C07D 2273/005	.. with four ring hetero atoms
C07D 2273/006	. Six-membered rings
C07D 2273/008	. Rings containing more than six ring members
C07D 2275/00	Heterocyclic compounds containing 1,2-thiazole or hydrogenated 1,2-thiazole rings

- C07D 2275/02 . not condensed with other rings
- C07D 2275/021 . . with only hydrogen atoms, hydrocarbon radicals or substituted hydrocarbon radicals directly attached to ring carbon atoms
- C07D 2275/023 . . with hetero atoms or with carbon atoms having three bonds to hetero atoms, with at the most one bond to halogen, e.g. ester or nitrile radicals, directly attached to ring carbon atoms
- C07D 2275/025 . . . not provided for by [C07D 275/02D2](#) and [C07D 275/02D3](#)
- C07D 2275/026 . . . Oxygen atoms
- C07D 2275/028 . . . Nitrogen atoms, not forming part of a nitro radical

- C07D 2275/04 . condensed with carbocyclic rings or ring systems
- C07D 2275/042 . . without hetero atoms directly attached to the ring sulfur atom
- C07D 2275/044 . . not provided for by [C07D 275/04D](#) and [C07D 275/04 F](#)
- C07D 2275/046 . . benz[cisothiazoles
hydrogenated benz[c]isothiazoles]
- C07D 2275/048 . . benz[disothiazoles
hydrogenated benz[d]isothiazoles]
- C07D 2275/06 . . with hetero atoms directly attached to the ring sulfur atom
- C07D 2275/062 . . . not provided for by [C07D 275/06D](#) and [C07D 275/06 F](#)
- C07D 2275/065 . . . benz[cisothiazoles
hydrogenated benz[c]isothiazoles]
- C07D 2275/067 . . . benz[disothiazoles
hydrogenated benz[d]isothiazoles]

- C07D 2277/00 Heterocyclic compounds containing 1,3-thiazole or hydrogenated 1,3-thiazole rings**

- C07D 2277/02 . not condensed with other rings
- C07D 2277/20 . . having two or three double bonds between ring members or between ring members and non-ring members
- C07D 2277/201 . . . having three or more double bonds between ring members or between ring members and non-ring members
- C07D 2277/203 . . . having two double bonds between ring members or between ring members and non-ring members
- C07D 2277/205 [N: with a hydrocarbon radical substituted by a carbon atom having three hetero bonds, with at the most one to halogen, e.g. ester or nitrile radicals, directly attached to a ring carbon atom, said hydrocarbon radical being further substituted in the alpha-position to the hetero ring by a hetero atom or a doubly bound carbon atom, i.e.]
- C07D 2277/206 the alpha-substituent being an oxo, thioxo or a possibly substituted oximino radical (*X is =O, =S, =NOR)
- C07D 2277/208 the alpha-substituent being a densely bound carbon atom (*X is =C)
- C07D 2277/22 . . with only hydrogen atoms, hydrocarbon or substituted hydrocarbon radicals, directly attached to ring carbon atoms
- C07D 2277/223 . . . Hydrogen or hydrocarbon radicals
- C07D 2277/226 . . . Radicals substituted by heteroatoms not provided for by [C07D 277/24](#) to [C07D 277/30](#)
- C07D 2277/32 . . with hetero atoms or with carbon atoms having three bonds to hetero atoms

		with at the most one bond to halogen, e.g. ester or nitrile radicals, directly attached to ring carbon atoms
C07D 2277/323	....	Hetero atoms not provided for by C07D 277/32D to C07D 277/58
C07D 2277/326	....	Oxygen or sulfur atoms
C07D 2277/60	.	condensed with carbocyclic rings or ring-systems
C07D 2277/605	..	Not provided for by C07D 277/62 to C07D 277/84
C07D 2277/62	..	Benzothiazoles
C07D 2277/625	...	not substituted in position 2
C07D 2277/68	...	with hetero atoms or with carbon atoms having three bonds to hetero atoms with at the most one bond to halogen, e.g. ester or nitrile radicals, directly attached in position 2
C07D 2277/685	....	Not provided for by C07D 277/70 to C07D 277/82
C07D 2277/70	....	Sulfur atoms
C07D 2277/705	.....	not provided for by C07D 277/72 , e.g. possibly hydrogenated 2-mercaptobenzo-thiazole substituted in the carbocyclic ring
C07D 2285/00		Heterocyclic compounds containing rings having nitrogen and sulfur atoms as the only ring hetero atoms, not provided for by groups C07D 275/00 to C07D 283/00
C07D 2285/001	.	Five-membered rings
C07D 2285/003	..	with three ring hetero atoms
C07D 2285/005	..	with four ring hetero atoms
C07D 2285/006	.	Six-membered rings
C07D 2285/008	.	Rings containing more than eight ring-members
C07D 2285/01	.	Five-membered rings
C07D 2285/02	..	Thiadiazoles Hydrogenated thiadiazoles
C07D 2285/04	...	not condensed with other rings
C07D 2285/08	....	1,2,4-Thiadiazoles Hydrogenated 1,2,4-thiadiazoles
C07D 2285/083	.....	without oxygen, sulfur or nitrogen atoms directly attached to ring carbon atoms
C07D 2285/086	.....	with oxygen, sulfur or nitrogen atoms directly attached to ring carbon atoms
C07D 2285/10	....	1,2,5-Thiadiazoles Hydrogenated 1,2,5-thiadiazoles
C07D 2285/103	.....	without a sulphonylamino radical directly attached to ring carbon atoms
C07D 2285/106	.....	with a sulphonylamino radical directly attached to ring carbon atoms
C07D 2285/12	....	1,3,4-Thiadiazoles Hydrogenated 1,3,4-thiadiazoles
C07D 2285/1203	.....	without oxygen, sulfur or nitrogen atoms directly attached to ring carbon atoms
C07D 2285/1207	.....	with oxygen, sulfur or nitrogen atoms directly attached to ring carbon

		atoms
C07D 2285/1211	.....	Oxygen atoms
C07D 2285/1215	.....	Sulfur atoms
C07D 2285/1219	.....	Nitrogen atoms
C07D 2285/1223	.....	Non-acylated nitrogen atoms
C07D 2285/1226	.....	N-acylated nitrogen atoms
C07D 2285/123	.....	Acyl derived from carboxylic acids, or their nitrogen or sulfur analogs
C07D 2285/1234	.....	Acyl derived from carbonic acid, or its nitrogen or sulfur analogues
C07D 2285/1238	.....	Acyl with a structure -C(=Y)-N (Y: O,S,N) , e.g. urea
C07D 2285/1242	.....	with hetero atoms attached to the nitrogen atoms
C07D 2285/1246	.....	Sulphonylamino radical, e.g. sulfonamides
C07D 2285/14	...	condensed with carbocyclic rings or ring systems
C07D 2285/143	....	condensed 1,2,3-thiadiazoles and hydrogenated derivatives
C07D 2285/146	....	condensed 1,2,5-thiadiazoles and hydrogenated derivatives
C07D 2285/15	. Six-membered rings	
C07D 2285/16	.. Thiadiazines	
	Hydrogenated thiadiazines	
C07D 2285/162	... 1,2,3-Thiadiazines	
	Hydrogenated 1,2,3-thiadiazines	
C07D 2285/164	... 1,2,5-Thiadiazines	
	Hydrogenated 1,2,5-thiadiazines	
C07D 2285/166	... 1,2,6-Thiadiazines	
	Hydrogenated 1,2,6-thiadiazines	
C07D 2285/168	... 1,3,4-Thiadiazines	
	Hydrogenated 1,3,4-thiadiazines	
C07D 2285/18	... 1,2,4-Thiadiazines	
	Hydrogenated 1,2,4-thiadiazines	
C07D 2285/20	.... condensed with carbocyclic rings or ring systems	
C07D 2285/22	..... condensed with one six-membered ring	
C07D 2285/225	..... Benzo-1,2,4-thiadiazines and hydrogenated derivatives	
C07D 2291/00	Heterocyclic compounds containing rings having nitrogen, oxygen and sulfur atoms as the only ring hetero atoms	
C07D 2291/02	. not condensed with other rings	
C07D 2291/04	.. Five-membered rings	
C07D 2291/043	... with three ring hetero atom	
C07D 2291/046	... with four ring hetero atom	
C07D 2293/00	Heterocyclic compounds containing rings having nitrogen and selenium or nitrogen and tellurium, with or without oxygen or sulfur atoms, as the ring hetero atoms	

- C07D 2293/10 . condensed with carbocyclic rings or ring systems
- C07D 2293/105 . . the heteroring containing three ring hetero atoms

- C07D 2295/00 Heterocyclic compounds containing polymethylene-imine rings with at least five ring members, 3-azabicyclo [3.2.2.] nonane, piperazine, morpholine or thiomorpholine rings, having only hydrogen atoms directly attached to the ring carbon atoms**

- C07D 2295/02 . containing only hydrogen and carbon atoms in addition to the ring hetero elements
- C07D 2295/0202 . . containing only one hetero ring
- C07D 2295/0204 . . . with only hydrogen atoms attached to the hetero ring nitrogen atom
- C07D 2295/0206 . . . with carbon atoms that form part of a cyclic radical attached to the ring nitrogen atom
- C07D 2295/0208 with carbon atoms aliphatically bound to the ring nitrogen atom
- C07D 2295/021 with carbon atoms aromatically bound to the ring nitrogen atom
- C07D 2295/0212 . . . wherein the ring nitrogen atom is bound to non-cyclic carbon atoms
- C07D 2295/0215 wherein the ring nitrogen atom is substituted by acyclic saturated hydrocarbon radicals
- C07D 2295/0217 wherein the ring nitrogen atom is substituted by acyclic unsaturated hydrocarbon radicals
- C07D 2295/0219 wherein the ring nitrogen atom is substituted by hydrocarbon radicals with aliphatically bound rings to these radicals
- C07D 2295/0221 wherein the ring nitrogen atom is substituted by hydrocarbon radicals with aromatically bound rings to these radicals
- C07D 2295/0223 . . . wherein the hetero ring nitrogen atom is quaternized
- C07D 2295/0225 . . containing two or more heterorings
- C07D 2295/0227 . . preparation of these heterocyclic compounds

- C07D 2295/04 . with substituted hydrocarbon radicals attached to ring nitrogen atoms
- C07D 2295/06 . . substituted by halogen atoms or nitro radicals
- C07D 2295/0606 . . . in which the substituent is separated from the ring nitrogen atom by cyclic radicals
- C07D 2295/0612 the substituent and the ring nitrogen atom are directly attached to the same cyclic radical
- C07D 2295/0619 the ring nitrogen atom is directly attached to a cyclic radical and the substituent is not bound to the same cyclic radical
- C07D 2295/0625 the ring nitrogen atom is not directly attached to a cyclic radical and the substituent is directly bound to a cyclic radical
- C07D 2295/0631 the ring nitrogen atom and the substituent are not attached to cyclic radicals
- C07D 2295/0638 . . . in which the ring nitrogen atom and the substituent are bound to the same hydrocarbon chain that is not interrupted by a cyclic radical
- C07D 2295/0644 the chain is acyclic and saturated
- C07D 2295/065 the chain is acyclic and unsaturated
- C07D 2295/0657 aliphatically bound rings form part of the hydrocarbon chain
- C07D 2295/0663 aromatically bound rings form part of the hydrocarbon chain
- C07D 2295/08 . . substituted by singly bound oxygen or sulfur atoms

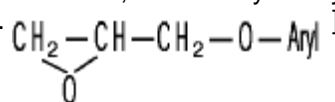
C07D 2295/0801	...	in which the substituent is separated from the ring nitrogen atom by cyclic radicals
C07D 2295/0803	....	the ring nitrogen atom and the substituent are directly attached to the same cyclic radical
C07D 2295/0805	....	the ring nitrogen atom is directly attached to a cyclic radical and the substituent is not bound to the same cyclic radical
C07D 2295/0806	....	the ring nitrogen atom is not directly attached to a cyclic radical and the substituent is directly bound to a cyclic radical
C07D 2295/0808	....	the ring nitrogen atom and the substituent are not attached to cyclic radicals
C07D 2295/081	...	in which the ring nitrogen atom and the hetero atom substituent are bound to the same hydrocarbon chain that is not interrupted by a cyclic radical
C07D 2295/0811	....	the chain is acyclic and saturated
C07D 2295/0813	.....	the hetero atom is substituted by hydrogen atoms
C07D 2295/0815	.....	the hetero atom is substituted by hydrocarbon radicals
C07D 2295/0816	.....	by acyclic hydrocarbon radical
C07D 2295/0818	.....	by hydrocarbon radicals with rings aliphatically bound to these radicals or by aliphatically bound cyclic hydrocarbon radicals
C07D 2295/082	.....	by hydrocarbon radicals with rings aromatically bound to these radicals
C07D 2295/0821	.....	by aromatically bound radicals
C07D 2295/0823	.....	in which the aliphatic chain between the hetero atom and the ring nitrogen atom is not substituted by a hydroxy group or derivatives thereof
C07D 2295/0825	.....	in which the aliphatic chain between the hetero atom and the ring nitrogen atom is substituted by a hydroxy group or derivatives thereof
C07D 2295/0826	.....	the hetero atom is acylated
C07D 2295/0828	.....	the hetero atom is substituted by other hetero atoms (with the exception of oxygen bound to sulfur in sulfoxides or sulfones)
C07D 2295/083	....	the chain is acyclic and unsaturated
C07D 2295/0831	....	aliphatically bound rings form part of the hydrocarbon chain
C07D 2295/0833	....	aromatically bound rings form part of the hydrocarbon chain
C07D 2295/0835	.....	the hetero atom is substituted by hydrogen atoms
C07D 2295/0836	.....	the hetero atom is substituted by hydrocarbon radicals
C07D 2295/0838	.....	the hetero atom is acylated
C07D 2295/10	..	substituted by doubly bound oxygen or sulfur atoms (acylated ring nitrogen atoms C07D 295/16)
C07D 2295/1002	...	in which the substituent is separated from the ring nitrogen atom by cyclic radicals
C07D 2295/1005	....	the substituent (carbonyl or thiocarbonyl group) and the ring nitrogen atom are directly attached to the same cyclic radical
C07D 2295/1008	....	the ring nitrogen atom is directly attached to a cyclic radical and the substituent is not bound to the same cyclic radical
C07D 2295/101	....	the ring nitrogen atom is not directly bound to a cyclic radical and the substituent (carbonyl or thiocarbonyl group) is directly bound to a cyclic radical
C07D 2295/1013	....	the ring nitrogen atom and the substituent are not attached to a cyclic radical

C07D 2295/1016	....	the doubly bound oxygen or sulfur atom forms part of a cyclic radical
C07D 2295/1018	...	in which the ring nitrogen atom and the substituent are bound to the same hydrocarbon chain that is not interrupted by a cyclic radical
C07D 2295/1021	....	the chain between the substituent and the ring nitrogen atom is acyclic and saturated
C07D 2295/1024	.....	the carbonyl or thiocarbonyl group is substituted by hydrogen atoms
C07D 2295/1026	.....	the carbonyl or thiocarbonyl group is substituted by aliphatically bound hydrocarbon radicals
C07D 2295/1029	.....	the carbonyl or thiocarbonyl group is substituted by aromatically bound hydrocarbon radicals
C07D 2295/1032	....	the chain between the substituent and the ring nitrogen atom is acyclic and unsaturated
C07D 2295/1034	....	aliphatically bound rings form part of the hydrocarbon chain
C07D 2295/1037	....	aromatically bound rings form part of the hydrocarbon chain
C07D 2295/12	..	substituted by singly or doubly bound nitrogen atoms (nitro radicals C07D 295/06)
C07D 2295/1202	...	in which the hetero atom is separated from the ring nitrogen atom by cyclic radicals
C07D 2295/1204	....	the hetero atom and the ring nitrogen atom are directly attached to the same cyclic radical
C07D 2295/1206	....	the ring nitrogen atom is directly attached to a cyclic radical and the hetero atom is not bound to the same cyclic radical
C07D 2295/1208	....	the ring nitrogen atom is not directly bound to a cyclic radical and the hetero atom is directly bound to a cyclic radical
C07D 2295/121	....	the ring nitrogen atom and the hetero atom are not attached to a cyclic radical
C07D 2295/1212	...	in which the ring nitrogen atom and the substituent are bound to the same hydrocarbon chain that is not interrupted by a cyclic radical
C07D 2295/1214	....	the chain between the substituent and the ring nitrogen atom is acyclic and saturated
C07D 2295/1216	.....	the hetero atom being singly bound to the chain, i.e. compounds of the type amino-(N)- A- N (hetero ring)
C07D 2295/1218	.....	having nitrogen atom of amino group further bound to hydrogen atoms or singly bound to acrylic carbon atoms or carbon atoms of rings other than six-membered aromatic rings
C07D 2295/122	.....	having nitrogen atom of amino group further bound to carbon atoms of six-membered aromatic rings
C07D 2295/1222	.....	having nitrogen atom of amino group further doubly bound to carbon atom
C07D 2295/1225	.....	having the aliphatic chain A further substituted
C07D 2295/1227	.....	Preparation, purification, separation or stabilisation Use of additives
C07D 2295/1229	.....	the hetero atom is acylated
C07D 2295/1231	.....	by carboxylic acids (or its N or S derivatives) with aliphatically bound carboxylic groups
C07D 2295/1233	.....	by carboxylic acids (or its N or S derivatives) with aromatically bound carboxylic groups
C07D 2295/1235	.....	by carbonic acids or esters thereof (or its S derivatives)
C07D 2295/1237	.....	by N-derivatives of carbonic acids

C07D 2295/1239	.....	the hetero atom is doubly bound to the aliphatic chain
C07D 2295/1241	.....	the hetero atom is bound to an other hetero atom
C07D 2295/1243	....	the chain between the substituent and the ring nitrogen atom is acyclic and unsaturated
C07D 2295/1245	....	aliphatically bound rings form part of the hydrocarbon chain
C07D 2295/1247	....	aromatically bound ringss form part of the hydrocarbon chain
C07D 2295/14	..	substituted by carbon atoms having three bonds to hetero atoms with at the most one bond to halogen, e.g. ester or nitrile radicals
C07D 2295/1402	...	the carbon atom having three bonds to hetero atoms and the ring nitrogen atom are separated by cyclic radicals
C07D 2295/1404	....	the ring nitrogen atom and the carbon having three bonds to hetero atoms are directly attached to the same cyclic radical
C07D 2295/1407	....	the ring nitrogen atom is directly attached to a cyclic radical but the carbon having three bonds to hetero atoms is not bound to the same cyclic radical
C07D 2295/1409	....	the ring nitrogen atom is not directly bound to a cyclic radical and the carbon having three bonds to hetero atoms is directly bound to a cyclic radical
C07D 2295/1411	....	the ring nitrogen atom and the carbon having three bonds to hetero atoms are not bound to a cyclic radical
C07D 2295/1414	...	the ring nitrogen atom and the carbon having three bonds to hetero atoms are attached to the same hydrocarbon chain that is not interrupted by a cyclic radical
C07D 2295/1416	....	the chain is acyclic and saturated
C07D 2295/1419	.....	the carbon atom having three bonds to hetero atoms has no bonds to sulfur, nitrogen, selenium or tellurium atoms
C07D 2295/1421	.....	the carbon atom having three bonds to hetero atoms has at least one bond to a sulfur, selenium or tellurium atom
C07D 2295/1423	.....	the carbon atom having three bonds to hetero atoms with at least one bond to a singly or doubly bound nitrogen atom
C07D 2295/1426	.....	having only singly bound nitrogen atoms further bound to acyclic carbon atoms or to carbon atoms of rings other than six-membered aromatic rings
C07D 2295/1428	.....	having only singly bound nitrogen atoms further bound to carbon atoms of six-membered aromatic rings
C07D 2295/143	.....	in which the aromatic ring is substituted in ortho position by benzoyl groups
C07D 2295/1433	.....	having only singly bound nitrogen atoms further bound to acyl radicals
C07D 2295/1435	.....	having at least doubly bound nitrogen atoms
C07D 2295/1438	.....	in which nitrogen atoms are further bound to other heteroatoms
C07D 2295/144	....	the carbon atom having three bonds to hetero atoms is triply bound to a nitrogen atom
C07D 2295/1442	....	the chain is acyclic and unsaturated
C07D 2295/1445	....	aliphatically bound rings form part of the hydrocarbon chain
C07D 2295/1447	....	aromatically bound rings form part of the hydrocarbon chain
C07D 2295/16	.	acylated on ring nitrogen atoms
C07D 2295/18	..	by radicals derived from carboxylic acids, or sulfur or nitrogen analogues thereof
C07D 2295/1801	...	by radicals derived from carboxylic acids

C07D 2295/1802	....	with aliphatically bound carboxylic groups
C07D 2295/1803	.....	wherein the hydrocarbon radical or the carboxylic acid is not substituted by hydroxy- or aminogroups (or derivatives thereof) or by carbon atoms having three bonds to hetero atoms with at the most one bond to halogen
C07D 2295/1804	.....	wherein the hydrocarbon radical of the carboxylic acid is substituted by hydroxy groups (or derivatives thereof)
C07D 2295/1805	.....	wherein the hydrocarbon radical of the carboxylic acid is substituted by amino groups (or derivatives thereof)
C07D 2295/1807	.....	wherein the hydrocarbon radical of the carboxylic acid is substituted by carbon atoms having three bonds to hetero atoms with at the most one bond to halogen
C07D 2295/1808	....	with aromatically bound carboxylic groups
C07D 2295/1809	.....	wherein the hydrocarbon radical of the carboxylic acid is not substituted by hydroxy- or amino groups (or derivatives thereof) or by carbon atoms having three bonds to hetero atoms with at the most one bond to halogen
C07D 2295/181	.....	wherein the hydrocarbon radical of the carboxylic acid is substituted by hydroxy groups (or derivatives thereof)
C07D 2295/1811	.....	wherein the hydrocarbon radical of the carboxylic acid is substituted by amino groups (or derivatives thereof)
C07D 2295/1812	.....	wherein the hydrocarbon radical of the carboxylic acid is substituted by carbon atoms having three bonds to hetero atoms with at the most one bond to halogen
C07D 2295/1814	....	Preparation, purification, separation, stabilisation
C07D 2295/1815	...	by radicals derived from thiocarboxylic acids
C07D 2295/1816	...	by radicals derived from nitrogen analogues of carboxylic acids
C07D 2295/1817	....	with aliphatically bound carbon atom of the iminocarboxylic group
C07D 2295/1818	....	with aromatically bound carbon atom of the iminocarboxylic group
C07D 2295/20	..	by radicals derived from carbonic acid, or sulfur or nitrogen analogues thereof
C07D 2295/2002	...	by radicals derived from carbonic acids
C07D 2295/2005	....	esters of carbamic acids derived from unsubstituted mono-alcohols
C07D 2295/2007	....	esters of carbamic acids derived from alcohols substituted by halogen, nitroso- or nitro groups
C07D 2295/201	....	esters of carbamic acids derived from alcohols substituted by singly bound oxygen or sulfur atoms
C07D 2295/2013	....	esters of carbamic acids derived from alcohols substituted by doubly bound oxygen or sulfur atoms
C07D 2295/2015	....	esters of carbamic acids derived from alcohols substituted by nitrogen atoms
C07D 2295/2018	....	esters of carbamic acids derived from alcohols substituted by carbon atoms having three bonds to hetero atoms with at the most one bond to halogen
C07D 2295/2021	....	esters of carbamic acids wherein the oxygen atom is bound to another hetero atom
C07D 2295/2023	...	by radicals derived from thiocarbonic acids
C07D 2295/2026	...	by radicals derived from nitrogen analogues of carbonic acids
C07D 2295/2028	....	with only singly bound nitrogen atoms, e.g. analogues of ureas or thioureas
C07D 2295/2031	.....	wherein the non-heterocyclic nitrogen atom is bound to hydrogen atoms or to acyclic or cycloaliphatic carbon atoms
C07D 2295/2034	.....	wherein the non-heterocyclic nitrogen atom is bound to aromatic carbon atoms

- C07D 2295/2036 wherein the non-heterocyclic nitrogen atom is acylated by radicals derived from carboxylic acids or analogues thereof, e.g. acylureas
- C07D 2295/2039 wherein the non-heterocyclic nitrogen atom is acylated by radicals derived from carbonic acids or analogues thereof, e.g. allophanates or biurets
- C07D 2295/2042 wherein the non-heterocyclic nitrogen atom is bound to other heteroatoms
- C07D 2295/2044 Preparation
Separation
Purification or Stabilisation
- C07D 2295/2047 with doubly bound nitrogen atoms, (e.g. analogues of isoureas or guanidines)
- C07D 2295/22 . . with hetero atoms directly attached to ring nitrogen atoms
- C07D 2295/221 . . the hetero atom is oxygen
- C07D 2295/222 . . the hetero atom is sulfur
- C07D 2295/223 . . . the sulfur atom is in addition bound to two oxygen atoms, (e.g. sulfonamides and sulfamides)
- C07D 2295/224 . . the hetero atom is nitrogen
- C07D 2295/225 . . . the nitrogen hetero atom is bound to hydrogen atoms or to hydrocarbon radicals
- C07D 2295/226 . . . the nitrogen hetero atom is acylated by radicals from carboxylic acids (or sulfur or nitrogen derivatives thereof)
- C07D 2295/227 . . . the nitrogen hetero atom is acylated by radicals from carbonic acids (or sulfur or nitrogen derivatives thereof)
- C07D 2295/228 . . . the nitrogen hetero atom is bound to another hetero atom
- C07D 2301/00 Preparation of oxiranes**
- C07D 2301/02 . Synthesis of the oxirane ring
- C07D 2301/20 . . by oxidation of unsaturated compounds with oxidants not provided for in [C07D 301/04](#) to [C07D 301/18](#) with organic hydroperoxides [C07D 301/20](#) C
- C07D 2301/203 . . . an electrolysis step is involved
- C07D 2301/206 . . . with organic hydroperoxides
- C07D 2303/00 Compounds containing three-membered rings having one oxygen atom as the only ring heteroatom**
- C07D 2303/02 . Compounds containing oxirane rings
- C07D 2303/12 . . with hydrocarbon radicals substituted by singly or doubly bound oxygen atoms
- C07D 2303/125 . . . not provided for in [C07D 303/14](#) to [C07D 303/32](#)
- C07D 2303/18 . . . by etherified hydroxyl radicals
- C07D 2303/20 . . . Ethers with hydroxy compounds containing no oxirane rings
- C07D 2303/22 with monohydroxy compounds

- C07D 2303/223 [N: Oxiranylmethoxy compounds with the oxygen atom attached to an aromatic carbon atom, the oxiranylmethyl radical being not further substituted, i.e. 
- C07D 2303/226 not provided for by [C07D 303/22](#) B
- C07D 2303/38 . . . with hydrocarbon radicals substituted by carbon atoms having three bonds to heteroatoms with at the most one bond to halogen, e.g. ester or nitrile radicals
- C07D 2303/385 . . . not provided for in [C07D 303/40](#) to [C07D 303/46](#)
- C07D 2307/00 Heterocyclic compounds containing five-membered rings having one oxygen atom as the only ring hetero atom**
- C07D 2307/005 . [N: condensed with carbocyclic rings or ring systems not provided for by [C07D 307/77](#) to [C07D 307/94](#) B, e.g.
(Image)
]
- C07D 2307/02 . not condensed with other rings
- C07D 2307/025 . . having more than three double bonds between ring members or between ring members and non-ring members
- C07D 2307/04 . . having no double bonds between ring members or between ring members and non-ring members
- C07D 2307/10 . . . with substituted hydrocarbon radicals attached to ring carbon atoms
- C07D 2307/105 . . . Radicals substituted by hetero atoms not provided for by [C07D 307/12](#) to [C07D 307/14](#)
- C07D 2307/18 . . . with hetero atoms or with carbon atoms having three bonds to hetero atoms with at the most one bond to halogen, e.g. ester or nitrile radicals, directly attached to ring carbon atoms
- C07D 2307/185 . . . Hetero atoms not provided for by [C07D 307/20](#) to [C07D 307/22](#)
- C07D 2307/26 . . having one double bond between ring members or between a ring member and a non-ring member
- C07D 2307/30 . . . with hetero atoms or with carbon atoms having three bonds to hetero atoms with at the most one bond to halogen, e.g. ester or nitrile radicals, directly attached to ring carbon atoms
- C07D 2307/32 . . . Oxygen atoms
- C07D 2307/323 in position 2
the oxygen atom is in the ketonic or unsubstituted enolic form
- C07D 2307/326 not provided for by [C07D 307/32](#) C
- C07D 2307/34 . . having two or three double bonds between ring members or between ring members and non-ring members
- C07D 2307/343 . . . having three double bonds between ring members or between ring members and non-ring members
- C07D 2307/346 . . . having two double bonds between ring members or between ring members and non-ring members
- C07D 2307/38 . . . with substituted hydrocarbon radicals attached to ring carbon atoms
- C07D 2307/385 . . . Radicals substituted by hetero atoms not provided for by [C07D 307/40](#) to [C07D 307/52](#)

C07D 2307/40	....	Radicals substituted by oxygen atoms
C07D 2307/42	.....	Singly bound oxygen atoms (two oxygen atoms bound to the same carbon atom C07D 307/46)
C07D 2307/422	.....	oxygen atoms substituted, but not by a cyclopropane containing acyl radical
C07D 2307/425	.....	oxygen atoms acylated by a cyclopropane-containing acyl radical, e.g. chrysanthemates
C07D 2307/427	.....	oxygen atoms as free hydroxyl-groups
C07D 2307/56	...	with hetero atoms or with carbon atoms having three bonds to hetero atoms with at the most one bond to halogen, e.g. ester or nitrile radicals, directly attached to ring carbon atoms
C07D 2307/565	....	Hetero atoms not provided for by C07D 307/58 to C07D 307/66 and C07D 307/70
C07D 2307/70	....	Nitro radicals
C07D 2307/71	.....	attached in position 5
C07D 2307/72	.....	with hydrocarbon radicals, substituted by nitrogen-containing radicals, attached in position 2
C07D 2307/74	.....	by hydrazino or hydrazono or such substituted radicals
C07D 2307/743	.....	not directly attached to hetero atoms or to carboxylic or carbonic acyl radicals, or their nitrogen or sulfur analogues, e.g. hydrazines
C07D 2307/746	.....	directly attached to further hetero atoms, e.g. sulfonylhydrazines
C07D 2307/77	.	ortho- or peri-condensed with carbocyclic rings or ring systems
C07D 2307/775	..	condensed with a ring system containing only six-membered carbocyclic rings, not provided for by C07D 307/78 to C07D 307/92 E
C07D 2307/78	..	Benzo [b] furans Hydrogenated benzo [b] furans
C07D 2307/79	...	with only hydrogen atoms, hydrocarbon or substituted hydrocarbon radicals directly attached to carbon atoms of the hetero ring
C07D 2307/793	....	hydrogen atoms or hydrocarbon radicals
C07D 2307/796	....	substituted hydrocarbon radicals not provided for by C07D 307/80 to C07D 307/81
C07D 2307/82	...	with hetero atoms or with carbon atoms having three bonds to hetero atoms with at the most one bond to halogen, e.g. ester or nitrile radicals, directly attached to carbon atoms of the hetero ring
C07D 2307/825	....	Hetero atoms not provided for by C07D 307/83
C07D 2307/87	..	Benzo [c] furans Hydrogenated benzo [c] furans
C07D 2307/875	...	not provided for by C07D 307/88 or C07D 307/90
C07D 2307/88	...	with one oxygen atom directly attached in position 1 or 3
C07D 2307/882	....	3,3-Diphenyl-phthalan and quinoid forms:
		(images)
C07D 2307/91	..	Dibenzofurans Hydrogenated dibenzofurans
C07D 2307/911	...	Having six double bonds between ring members or between ring members and

		non-ring members
C07D 2307/912	....	with hydrogen atoms, hydrocarbon or substituted hydrocarbon radicals attached to ring carbon atoms
C07D 2307/913	....	with hetero atoms or with carbon atoms having three bonds to hetero atoms with at the most one bond to halogen, e.g. ester or nitrile radicals, directly attached to ring carbon atoms
C07D 2307/914	.....	Hetero atoms not provided for by C07D 307/91B3D to C07D 307/91B3F
C07D 2307/915	.....	Oxygen or sulfur atoms
C07D 2307/916	.....	Nitrogen atoms not forming part of a nitro radical
C07D 2307/917	.....	Carbon atoms having three bonds to hetero atoms with at the most one bond to halogen, e.g. ester or nitrile radicals
C07D 2307/918	...	not having six double bonds between ring members or between ring members and non-ring members
C07D 2307/92	..	Naphthofurans Hydrogenated naphthofurans
C07D 2307/922	...	[N: not provided for by C07D 307/92D to C07D 307/92E e.g. (Image)]
C07D 2307/925	...	Naphtho[b]furans Hydrogenated naphtho[b]furans]
C07D 2307/927	...	Naphtho[c]furans Hydrogenated naphtho[c]furans]
C07D 2307/93	..	condensed with a ring other than six-membered
C07D 2307/931	...	Cyclopenta[b]furans Hydrogenated cyclopenta[b]furans, not further condensed]
C07D 2307/932	....	with only hydrogen or oxygen atoms directly attached in position 2, e.g. lactones or lactols
C07D 2307/933	....	with carbon atoms directly attached in position 2, e.g. prostacyclins
C07D 2307/94	.	spiro-condensed with carbocyclic rings or ring systems, e.g. griseofulvins
C07D 2307/945	..	Benzo[b]furans,2-spirocondensed with a six-membered ring Hydrogenated benzo[b]furans,2-spiro condensed with a six-membered ring, e.g. griseofulvins]
C07D 2311/00		Heterocyclic compounds containing six-membered rings having one oxygen atom as the only hetero atom, condensed with other rings
C07D 2311/005	.	[N: not provided for by C07D 311/02 to C07D 311/96 , e.g. (Image)]
C07D 2315/00		Heterocyclic compounds containing rings having one oxygen atom as the only ring hetero atom according to more than one of groups C07D 303/00 to C07D 313/00
C07D 2315/001	.	Preparation, stabilisation and working up of lactones
C07D 2315/002	..	four-membered rings, i.e. beta-lactones dimeric ketenes, see also C07C 49/88

- C07D 2315/003 . . five-membered rings, i.e. gamma-lactones
- C07D 2315/004 . . six-membered rings, i.e. delta-lactones
- C07D 2315/005 . . seven-membered rings, i.e. epsilon-lactones
- C07D 2315/006 . . rings containing more than seven ring members, e.g. ambrettolide
- C07D 2315/007 . . rings provided for by more than one of the preceding groups
- C07D 2315/008 . . Stabilisation of lactones

C07D 2317/00 Heterocyclic compounds containing five-membered rings having two oxygen atoms as the only ring hetero atoms

- C07D 2317/08 . having the hetero atoms in positions 1 and 3
- C07D 2317/72 . . spiro-condensed with carbocyclic rings
- C07D 2317/722 . . . directly condensed with a five-membered ring
- C07D 2317/725 . . . directly condensed with a six-membered ring
- C07D 2317/727 . . . directly condensed with a seven-membered ring

C07D 2319/00 Heterocyclic compounds containing six-membered rings having two oxygen atoms as the only ring hetero atoms

- C07D 2319/04 . 1,3-Dioxanes
Hydrogenated 1,3-dioxanes
- C07D 2319/08 . . condensed with carbocyclic rings or ring systems
- C07D 2319/083 . . . Monobenzo-1,3-dioxanes
hydrogenated monobenzo-1,3-dioxanes
- C07D 2319/086 . . . Other condensed 1,3-dioxanes

C07D 2323/00 Heterocyclic compounds containing more than two oxygen atoms as the only ring hetero atoms

- C07D 2323/04 . Six-membered rings
- C07D 2323/043 . . Substituted 1,2-trioxanes
- C07D 2323/046 . . Substituted 1,3-trioxanes
- C07D 2323/06 . . trioxane
- C07D 2323/065 . . . 1,3,5-trioxane

C07D 2333/00 Heterocyclic compounds containing five-membered rings having one sulfur atom as the only ring hetero atom

- C07D 2333/02 . not condensed with other rings
- C07D 2333/04 . . not substituted on the ring sulfur
- C07D 2333/26 . . . with hetero atoms or with carbon atoms having three bonds to hetero atoms
with at the most one bond to halogen, e.g. ester or nitrile radicals, directly
attached to ring carbon atoms
- C07D 2333/30 Hetero atoms other than halogen

C07D 2333/305	.....	Metals
C07D 2333/46	..	substituted on the ring sulfur atom
C07D 2333/48	...	by oxygen atoms
C07D 2333/483	....	one oxygen atom
C07D 2333/486	....	two oxygen atoms
C07D 2333/50	.	condensed with carbocyclic rings or ring systems
C07D 2333/505	..	Spiro-condensed systems
C07D 2333/52	..	Benzo[b]thiophenes Hydrogenated benzo[b]thiophenes
C07D 2333/54	...	with only hydrogen atoms, hydrocarbon or substituted hydrocarbon radicals, directly attached to carbon atoms of the hetero ring
C07D 2333/543	....	hydrogen atoms or hydrocarbon radicals
C07D 2333/546	....	substituted hydrocarbon radicals not provided for by C07D 333/56 to C07D 333/58
C07D 2333/62	...	with hetero atoms or with carbon atoms having three bonds to hetero atoms with at the most one bond to halogen, e.g. ester or nitrile radicals, directly attached to carbon atoms of the hetero ring
C07D 2333/625	....	Hetero atoms not provided for by C07D 333/64 to C07D 333/66
C07D 2335/00		Heterocyclic compounds containing six-membered rings having one sulfur atom as the only ring hetero atom
C07D 2335/04	.	condensed with carbocyclic rings or ring systems
C07D 2335/06	..	Benzothiopyrans Hydrogenated benzothiopyrans
C07D 2335/063	...	Benzo [B thiopyrans Hydrogenated benzo [b] thiopyrans]
C07D 2335/066	...	Benzo [C] thiopyrans Hydrogenated benzo [c] thiopyrans
C07D 2401/00		Heterocyclic compounds containing two or more hetero rings, having nitrogen atoms as the only ring hetero atoms, at least one ring being a six-membered ring with only one nitrogen atom
C07D 2401/14	.	containing three or more hetero rings
C07D 2401/145	..	see Table B
C07D 2403/00		Heterocyclic compounds containing two or more hetero rings, having nitrogen atoms as the only ring hetero atoms, not provided for by group C07D 401/00
C07D 2403/14	.	containing three or more hetero rings
C07D 2403/145	..	see Table B
C07D 2405/00		Heterocyclic compounds containing both one or more hetero rings having oxygen atoms as the only ring hetero atoms, and one or more rings having nitrogen as the only ring hetero atom

C07D 2405/14	. containing three or more hetero rings
C07D 2405/145	.. see Table B
C07D 2407/00	Heterocyclic compounds containing two or more hetero rings, at least one ring having oxygen atoms as the only ring hetero atoms, not provided for by group C07D 405/00
C07D 2407/14	. containing three or more hetero rings
C07D 2407/145	.. see Table B
C07D 2409/00	Heterocyclic compounds containing two or more hetero rings, at least one ring having sulfur atoms as the only ring hetero atoms
C07D 2409/14	. containing three or more hetero rings
C07D 2409/145	.. see Table B
C07D 2411/00	Heterocyclic compounds containing two or more hetero rings, at least one ring having oxygen and sulfur atoms as the only ring hetero atoms
C07D 2411/14	. containing three or more hetero rings
C07D 2411/145	.. see Table B
C07D 2413/00	Heterocyclic compounds containing two or more hetero rings, at least one ring having nitrogen and oxygen atoms as the only ring hetero atoms
C07D 2413/14	. containing three or more hetero rings
C07D 2413/145	.. see Table B
C07D 2417/00	Heterocyclic compounds containing two or more hetero rings, at least one ring having nitrogen and sulfur atoms as the only ring hetero atoms, not provided for by group C07D 415/00
C07D 2417/14	. containing three or more hetero rings
C07D 2417/145	.. see Table B
C07D 2419/00	Heterocyclic compounds containing two or more hetero rings, at least one ring having nitrogen, oxygen, and sulfur atoms as the only ring hetero atoms
C07D 2419/14	. containing three or more hetero rings
C07D 2419/145	.. see Table B
C07D 2421/00	Heterocyclic compounds containing two or more hetero rings, at least one ring having selenium, tellurium, or halogen atoms as ring hetero atoms
C07D 2421/14	. containing three or more hetero rings

C07D 2421/145 . . . see Table B

C07D 2451/00 Heterocyclic compounds containing 8-azabicyclo [3.2.1] octane, 9-azabicyclo [3.3.1] nonane, or 3-oxa-9-azatricyclo [3.3.1.0<2,4>] nonane ring systems, e.g. tropane or granatane alkaloids, scopolamine
Cyclic acetals thereof

C07D 2451/02 . . containing not further condensed 8-azabicyclo [3.2.1] octane or 3-oxa-9-azatricyclo [3.3.1.0<2,4>] nonane ring systems, e.g. tropane
 Cyclic acetals thereof

C07D 2451/023 . . . 8-azabicyclo(3.2.1)octane ring systems, their 6,7 epoxy derivatives or cyclic acetals, further condensed with carbocyclic rings or ring systems

C07D 2451/026 . . . without hetero atoms directly attached in position 3

C07D 2451/04 . . . with hetero atoms directly attached in position 3 of the 8-azabicyclo [3.2.1] octane or in position 7 of the 3-oxa-9-azatricyclo [3.3.1.0<2,4>] nonane ring system

C07D 2451/045 . . . Hetero atoms different from oxygen

C07D 2451/06 . . . Oxygen atoms

C07D 2451/062 unsubstituted hydroxy or keto radicals

C07D 2451/064 ethers, acetals, cyclic acetals

C07D 2451/066 acylated by carboxylic or carbonic acids, or their nitrogen or sulfur analogs

C07D 2451/068 attached to a further hetero atom, e.g.

(Image)

C07D 2451/14 . . containing 9-azabicyclo [3.3.1] nonane ring systems, e.g. granatane, 2-aza-adamantane
 Cyclic acetals thereof

C07D 2451/145 . . . Granatanes condensed with carbocyclic rings or ring systems, (e.g. 2-Aza-adamantanes)

C07D 2453/00 Heterocyclic compounds containing quinuclidine or iso-quinuclidine ring systems, e.g. quinine alkaloids

C07D 2453/06 . . containing isoquinuclidine ring systems

C07D 2453/065 . . . Isoquinuclidines condensed with carbocyclic rings or ring systems

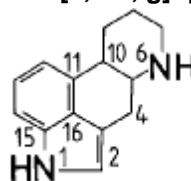
C07D 2455/00 Heterocyclic compounds containing quinolizine ring systems, e.g. emetine alkaloids, protoberberine
Alkylenedioxy derivatives of dibenzo [a, g] quinolizines, e.g. berberine

C07D 2455/02 . . containing not further condensed quinolizine ring systems

C07D 2455/025 . . . quinolizines condensed with carbocyclic rings or ring systems, not provided for by 455/04 and 455/06, e.g. berberine and its alkylenedioxy derivatives

C07D 2457/00

Heterocyclic compounds containing indolo [4, 3-f, g] quinoline ring systems, e.g. derivatives of ergoline, of the formula:



, e.g. lysergic acid (

compounds of the cyclic peptide type derived from ergotamane [C07D 519/02](#))

C07D 2457/04

- . with carbon atoms having three bonds to hetero atoms with at the most one bond to halogen, e.g. ester or nitrile radicals, directly attached in position 8

C07D 2457/045

- . . acids, esters, acid halides

C07D 2457/06

- . . Lysergic acid amides

C07D 2457/065

- . . . not provided for by 457/08, e.g. C(=O)N<, C(=O)N-N<

C07D 2459/00

**Heterocyclic compounds containing benz [g] indolo [2, 3-a] quinolizine ring systems, e.g. yohimbine
16, 18-lactones thereof, e.g. reserpilic acid lactone**

C07D 2459/001

- . with position 16 not directly attached to carbon atoms having three bonds to hetero atoms, with at the most one to halogen, e.g. ester or nitrile radicals, yohimbane

C07D 2459/002

- . with position 16 directly attached to carbon atoms having three bonds to hetero atoms, with at the most one bond to halogen, e.g. ester or nitrile radicals

C07D 2459/003

- . . with position 18 only attached to hydrogen atoms, e.g. yohimbine, corynanthine

C07D 2459/005

- . . with position 18 substituted, but not directly attached to oxygen atoms

C07D 2459/006

- . . with position 18 directly attached to oxygen atoms

C07D 2459/007

- . . . keto, hydroxyl or ether radicals, e.g. reserpilic acid

C07D 2459/008

- . . . acylated by carboxylic or carbonic acids or their nitrogen or sulfur analogues, e.g. reserpine
and their 16, 18-lactones

C07D 2473/00

Heterocyclic compounds containing purine ring systems

C07D 2473/001

- . with position 9 substituted by optionally unsaturated, substituted or cyclic sequences beginning with an acyclic or cyclic -C-X-C-C or -C-C-C-C, wherein X represents an hetero atom

C07D 2473/003

- . . sequence beginning with -C-C-C-C

C07D 2473/005

- . . . at least two of these atoms being part of the same ring

C07D 2473/006

- . . sequence beginning with -C-X-C-C

C07D 2473/008

- . . . at least two of these atoms being part of the same ring

C07D 2473/02

- . with oxygen, sulfur or nitrogen atoms directly attached in positions 2 and 6

C07D 2473/04

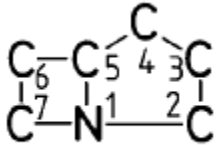
- . . two oxygen atoms

C07D 2473/045

- . . . Molecular addition compounds

C07D 2473/06

- . . . with radicals containing only hydrogen and carbon atoms, attached in position 1 or 3

C07D 2473/065	....	Molecular addition compounds
C07D 2473/08	....	with methyl radicals in positions 1 and 3, e.g. theophylline
C07D 2473/085	.....	Molecular addition compounds
C07D 2473/10	....	with methyl radicals in positions 3 and 7, e.g. theobromine
C07D 2473/105	.....	Molecular addition compounds
C07D 2473/12	....	with methyl radicals in positions 1, 3 and 7, e.g. caffeine
C07D 2473/125	.....	Molecular addition compounds
C07D 2473/26	.	with an oxygen, sulfur or nitrogen atom directly attached in position 2 or 6, but not in both
C07D 2473/28	..	Oxygen atom
C07D 2473/30	...	attached in position 6, e.g. hypoxanthine
C07D 2473/305	....	Molecular addition compounds
C07D 2473/32	..	Nitrogen atom
C07D 2473/34	...	attached in position 6, e.g. adenine
C07D 2473/345	....	Molecular addition compounds
C07D 2477/00		Heterocyclic compounds containing 1-azabicyclo [3.2.0] heptane ring systems, i.e. compounds containing a ring system of the formula:
		
		carbapenicillins, thienamycins
		Such ring systems being further condensed, e.g. 2,3-condensed with an oxygen-, nitrogen- or sulfur-containing hetero ring
C07D 2477/005	.	further condensed with carbocyclic rings or ring systems
C07D 2477/10	.	with hydrogen atoms, hydrocarbon or substituted hydrocarbon radicals, directly attached in position 4 and with a carbon atom having three bonds to hetero atoms with at the most one bond to halogen, e.g. an ester or nitrile radical, directly attached in position 2
C07D 2477/12	..	with hydrogen atoms, hydrocarbon or substituted hydrocarbon radicals, attached in position 6
C07D 2477/14	...	with hydrogen atoms, hydrocarbon or substituted hydrocarbon radicals, attached in position 3
C07D 2477/141	....	Hydrogen atoms or acyclic carbon atoms
C07D 2477/143	....	Cyclic carbon atoms
C07D 2477/145	.....	being part of an optionally substituted carbocyclic ring or ring system
C07D 2477/146	.....	and being aromatic
C07D 2477/148	....	Heterocyclic rings or ring systems
C07D 2477/16	...	with hetero atoms or carbon atoms having three bonds to hetero atoms with at the most one bond to halogen, e.g. an ester or nitrile radical, directly attached in position 3
C07D 2477/20	....	Sulfur atoms

- C07D 2477/203 attached to an acyclic hydrocarbon radical or to a substituted acyclic hydrocarbon radical
- C07D 2477/206 attached to a hetero ring or ring system

C07D 2521/00 Heterocyclic compounds containing unspecified hetero rings

NOTE

This group is only used for the classification of heterocyclic compounds the chemical structure of which is not specified, i.e. only in those cases where the heterocyclic compounds cannot be classified in any of groups [C07D 201/00](#) to [C07D 519/00](#)

- C07D 2521/0001 . Substituted pyrazoles, -imidazoles or -1,2,4-triazoles with only hydrogen atoms or unsubstituted hydrocarbon radicals containing up to five carbon atoms, attached to ring carbon atoms
- C07D 2521/0003 . . with acyclic carbon atoms directly attached to ring nitrogen atoms
- C07D 2521/0004 . . . which are part of aliphatic chains optionally substituted by rings, having neither hetero atoms nor carbon atoms having three bonds to hetero atoms with at the most bond one to halogen, directly attached to its acyclic aliphatic carbon atoms, nor hetero rings containing only oxygen atoms as hetero atoms attached through their alpha-position to said carbon atoms
- C07D 2521/0006 not provided for by [C07D 521/00B1C5](#) to [C07D 521/00B1C8T](#)
- C07D 2521/0007 . . . with optionally substituted carbocyclic aryl radicals attached to carbon atoms of the chain
- C07D 2521/0009 tri (optionally substituted) arylmethyl chains
- C07D 2521/0011 . . . with optionally substituted hetero rings attached through their carbon atoms to carbon atoms of the chain
- C07D 2521/0012 tri (optionally substituted) arylmethyl chains, at least one carbocyclic aryl radical being replaced by a heterocyclic aryl radical
- C07D 2521/0014 . . . which are part of aliphatic chains optionally substituted by rings, having halogen atoms or nitro radicals directly attached to their acyclic aliphatic carbon atoms
- C07D 2521/0015 . . . attached in position-alpha
- C07D 2521/0017 . . . attached in position-beta
- C07D 2521/0019 . . . attached in position-gamma
- C07D 2521/002 . . . attached elsewhere than in position-alpha to -gamma
- C07D 2521/0022 . . . which are part of aliphatic chains optionally substituted by rings, having oxygen atoms directly attached to their acyclic aliphatic carbon atoms, or having hetero rings containing only oxygen atoms as hetero atoms attached through their alpha-position to said carbon atoms
- C07D 2521/0023 . . . attached in position-alpha (carboxylic or carbonic radicals 521/00B3C)
- C07D 2521/0025 not provided for by [C07D 521/00B1E1B](#) to [C07D 521/00B1E1H](#)
- C07D 2521/0026 with optionally substituted carbocyclic aryl radicals attached to carbon atoms of the chain
- C07D 2521/0028 the oxygen atoms being part of a hetero ring attached through its alpha-position to the chain, and containing only oxygen atoms as ring hetero atoms
- C07D 2521/003 with optionally substituted hetero rings attached through their carbon atoms to carbon atoms of the chain

C07D 2521/0031	....	attached in position-beta
C07D 2521/0033	.....	not provided for by C07D 521/00B1E2B to C07D 521/00B1E2H
C07D 2521/0034	.....	with optionally substituted carbocyclic aryl radicals attached to carbon atoms of the chain
C07D 2521/0036	.....	the oxygen atoms being part of a hetero ring attached through its alpha-position to the chain, and containing only oxygen atoms as ring hetero atoms
C07D 2521/0038	.....	with optionally substituted hetero rings attached through their carbon atoms to carbon atoms of the chain
C07D 2521/0039	.....	having additional oxygen atoms attached in position-alpha
C07D 2521/0041	....	attached in position-gamma
C07D 2521/0042	.....	not provided for by C07D 521/00B1E3B to C07D 521/00B1E3H
C07D 2521/0044	.....	with optionally substituted carbocyclic aryl radicals attached to carbon atoms of the chain
C07D 2521/0046	.....	the oxygen atoms being part of a hetero ring attached through its alpha-position to the chain, and containing only oxygen atoms as ring hetero atoms
C07D 2521/0047	.....	with optionally substituted hetero rings attached through their carbon atoms to carbon atoms of the chain
C07D 2521/0049	....	attached elsewhere than in position-alpha to -gamma
C07D 2521/005	.....	not provided for by C07D 521/00B1E9B to C07D 521/00B1E9H
C07D 2521/0052	.....	with optionally substituted carbocyclic aryl radicals attached to carbon atoms of the chain
C07D 2521/0053	.....	the oxygen atoms being part of a hetero ring attached through its alpha-position to the chain, and containing only oxygen atoms as ring hetero atoms
C07D 2521/0055	.....	with optionally substituted hetero rings attached through their carbon atoms to carbon atoms of the chain
C07D 2521/0057	...	which are part of aliphatic chains optionally substituted by rings, having sulfur atoms directly attached to their acyclic aliphatic carbon atoms
C07D 2521/0058	....	attached in position-alpha
C07D 2521/006	....	attached in position-beta
C07D 2521/0061	....	attached in position-gamma
C07D 2521/0063	....	attached elsewhere than in position-alpha to -gamma
C07D 2521/0065	...	which are part of aliphatic chains optionally substituted by rings, having nitrogen atoms not forming part of a nitro radical directly attached to their acyclic aliphatic carbon atoms
C07D 2521/0066	....	attached in position-alpha
C07D 2521/0068	....	attached in position-beta
C07D 2521/0069	....	attached in position-gamma
C07D 2521/0071	....	attached elsewhere than in position-alpha to -gamma
C07D 2521/0073	...	which are part of aliphatic chains optionally substituted by rings, having carbon atoms having three bonds to heteroatoms with at the most one bond to halogen, directly attached to their acyclic aliphatic carbon atoms
C07D 2521/0074	....	attached in position-alpha
C07D 2521/0076	....	attached in position-beta
C07D 2521/0077	....	attached in position gamma

- C07D 2521/0079 attached elsewhere than in position-alpha to -gamma
- C07D 2521/008 . . with cyclic carbon atoms directly attached to ring nitrogen atoms
- C07D 2521/0082 . . . not provided for by [C07D 521/00B2E](#) or [C07D 521/00B2H](#)
- C07D 2521/0084 . . . aromatic cyclic carbon atoms
- C07D 2521/0085 . . . heterocyclic carbon atoms
- C07D 2521/0087 . . with acyl radicals or with heteroatoms directly attached to ring nitrogen atoms
- C07D 2521/0088 . . . carboxylic or carbonic acyl radicals, their nitrogen or sulfur analogs
- C07D 2521/009 carboxylic acyl radicals, e.g. -CO-R
- C07D 2521/0092 carbonic acyl radicals, e.g. -C(=O)-R
- C07D 2521/0093 . . . heteroatoms
- C07D 2521/0095 not provided for by [C07D 521/00B3D4](#)
- C07D 2521/0096 nitrogen atoms

(Image)

- C07D 2521/0098 . [N: Heterocyclic compounds containing the group

(Image)

or isomers thereof, e.g

(Image)

wherein A, which is attached through a ring carbon atom, is a hetero ring or a condensed heteroring system, X is a direct or indirect link and W is a heteroatom]